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THE MARKETING OF COTTONSEED.

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THE MARKETING OF COTTONSEED

By Marion E. Whitten, cotton technologist and
Joseph H. Stevenson, agricultural economist

ECONOMIC IMPORTANCE OF COTTONSEED

Before the nineteenth century, cotton was grown commercially for the lint only. About 100 years ago, however, attempts were begun to recover the oil from cottonseed on an industrial basis. For several decades following this initial effort, cottonseed remained largely a waste material on account of processing difficulties but by 1881 about 12 percent of the seed crop was crushed and approximately 25 percent of it was crushed by 1889. Improved techniques in processing seed followed in rapid succession and in 1909 about 73 percent of the seed production was crushed at cottonseed mills.

From 1928-29 to 1947-48, about 82 percent of total seed production in the United States entered commercial channels (table 1). During the 10-year period, 1938-47, approximately 4.6 million tons of seed were produced annually, of which about 4.0 million tons were processed by oil mills. The farm value of cottonseed for this 10-year period averaged about $212,400,000 annually or about one-fifth that of the lint. Cottonseed usually ranks among the 10 leading field crops in farm value in the United States and has been third in rank in the Cotton Belt. Since cottonseed is the less valuable member of the lint-seed crop, the production of seed is influenced primarily by factors determining production of lint cotton.

Cottonseed are processed into oil, cake or meal, linters, and hulls, all of which are important in the national economy. The oil is used extensively in manufacturing food products such as margarine, shortening, salad and cooking oil, and in soap products. Cake or meal is an excellent protein concentrate for use in feeding livestock and hulls provide a good roughage feed. Linters are used in the manufacture of bedding, in upholstering, and in chemical products such as plastics, lacquers, rayon, films, and explosives.

THE COTTONSEED MARKETING SYSTEM

Marketing Channels

The physical movement of cottonseed from farm to mill is characterized by directness and simplicity. Growers bring seed cotton to gins where the lint and seed are separated. The greater part of the seed, except that retained for planting and other farm uses, is sold immediately to ginners who, in turn, usually sell promptly to processing mills.

Table 1. -- Value and production of cotton lint and cottonseed in the United States, seasons 1928-29 to 1947-48

Season	Farm value of cotton lint 1/	Farm value of cottonseed 1/	Percentage of total cotton value represented by cottonseed	Tons of cottonseed produced 1/	Tons of cottonseed processed 2/	Percentage of cottonseed production processed
	1,000 dollars	1,000 dollars	Percent	1,000 tons	1,000 tons	Percent
1928-29	1,301,404	216,191	14.2	6,319	5,061	80.1
1929-30	1,243,840	198,164	13.7	6,406	5,016	78.3
1930-31	658,981	133,054	16.8	6,028	4,715	78.2
1931-32	483,575	65,678	12.0	7,310	5,328	72.9
1932-33	423,975	60,202	12.4	5,815	4,621	79.5
1933-34	663,383	71,166	9.7	5,511	4,157	75.4
1934-35	595,572	140,574	19.1	4,256	3,550	83.4
1935-36	590,021	141,527	19.3	4,634	3,818	82.4
1936-37	766,222	182,230	19.2	5,472	4,498	82.2
1937-38	796,469	152,974	16.1	7,844	6,326	80.6
1938-39	513,704	107,874	17.4	4,950	4,471	90.3
1939-40	536,996	102,933	16.1	4,869	4,151	85.3
1940-41	621,284	114,817	15.6	5,286	4,398	83.2
1941-42	914,313	216,961	19.2	4,553	4,008	88.0
1942-43	1,219,716	237,221	16.3	5,202	4,498	86.5
1943-44	1,135,605	244,059	17.7	4,688	3,955	84.4
1944-45	1,267,857	258,163	16.9	4,902	4,254	86.8
1945-46	1,014,823	187,155	15.6	3,664	3,262	89.0
1946-47	1,409,671	252,674	15.2	3,513	3,090	88.0
1947-48	1,892,528	402,015	17.5	4,681	4,082	87.2
Average:						
1938-47	1,052,650	212,387	16.8	4,631	4,017	86.7
1928-47	902,497	174,282	16.2	5,295	4,363	82.4

1/ Bureau of Agricultural Economics.
2/ Bureau of the Census.

The Effect of Physical Characteristics of the Seed on Marketing

As compared with many other agricultural products, cottonseed are very bulky in relation to weight. Cottonseed weigh about 32 pounds per bushel, as compared with 56 pounds for corn and 60 pounds for soybeans and wheat. This bulkiness creates relatively high costs in storing and transporting cottonseed and restricts its movement over long distances for processing.

Mills, therefore, customarily are located in close proximity to the source of supply. Prolonged storage at gins and on farms frequently is impractical because of susceptibility of seed to deterioration. This factor contributes to the highly seasonal nature of marketing. Extended storage usually is performed by mills that have proper facilities to retard deterioration.

Economic Factors Influencing Marketing

Practices followed by mills in purchasing seed are influenced appreciably, at times, by considerations arising from the seasonal nature of marketing and the excess capacity of the industry. The undesirability of gin and farm storage of cottonseed forces both growers and ginners to sell seed regularly during the relatively short period of harvesting. Since, however, capacity of the oil milling industry usually is considerably in excess of the seed available for processing, competition between mills frequently is very keen and they usually take the initiative in buying in order to obtain adequate supplies of seed for economic operation. Special inducements often are made by millers to ginners in order to obtain the output of seed; and in some sections, mills have acquired ownership of an appreciable proportion of the gins.

The quality of cottonseed often varies appreciably by location and season of harvest. Since such variations in quality can be measured only by highly technical chemical analyses, cottonseed normally are purchased by ginners without regard to the quality of individual lots of seed but are sold to the oil mills largely on the basis of quality.

In spite of the importance of cottonseed as a cash crop, few studies have been conducted with respect to the marketing of this commodity. So far as is known this study represents the first analysis of cottonseed marketing on a Belt-wide basis.

OBJECTIVES OF STUDY

The principal objectives of this study are: (1) to provide basic information and data relative to the cottonseed marketing

structure, and (2) to evaluate the practices, costs, and facilities of marketing cottonseed with a view to suggesting possible improvements in marketing methods and to reducing costs.

METHOD AND SCOPE OF STUDY

Data relative to the marketing of cottonseed were collected by the survey method from representative cotton gins and cottonseed oil mills toward the end of the 1947-48 season. Data were obtained by personal interview from 11 percent of the active gins in the Cotton Belt selected to provide a cross-section of production, ginning, and marketing practices in all producing sections (figure 1). These selected gins yielded a volume of seed equivalent to about 12 percent of the total cottonseed production for the 1947-48 season.

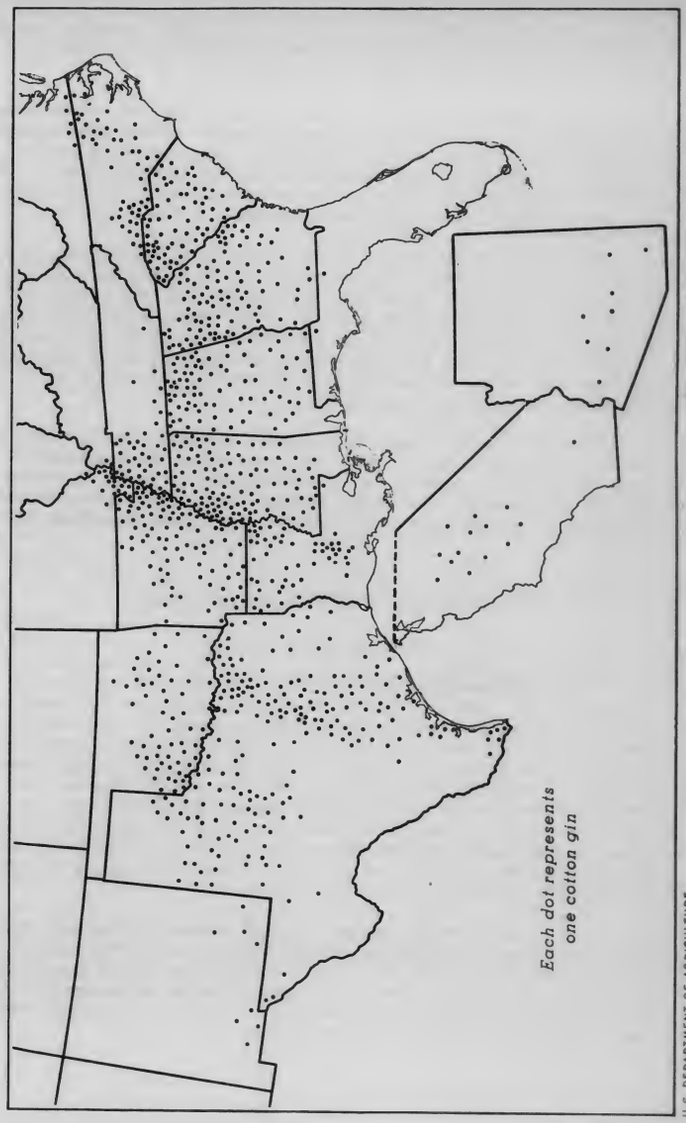
During the course of the study, information was collected from 53 percent of the cottonseed oil mills in active operation during 1947-48. These mills accounted for approximately 51 percent of the total volume of seed processed. Information obtained from ginners and oil millers, with respect to marketing practices and costs, was based on estimates obtained informally at the time of interview.

For the purpose of analyses, the Cotton Belt was divided into four geographic regions as follows: southeastern, south central, southwestern, and far western. 1/ Each region was comprised of States having similar production and marketing practices.

ORGANIZATION OF MARKETS FOR COTTONSEED

As stated previously cottonseed are marketed almost entirely through a simple distributive process of grower to ginner to mill. From the standpoint of actual trading sites, the marketing mechanism is even simpler since practically all trading is completed at gins. Growers sell almost exclusively to ginners at the gins.

1/ The southeastern region included Alabama, Florida, Georgia, North Carolina, South Carolina, and Virginia. The States of Arkansas, Illinois, Kentucky, Louisiana, Mississippi, Missouri, and Tennessee comprised the south central region. Oklahoma and Texas exclusive of the irrigated cotton-growing section in the extreme western part of Texas formed the southwestern region. Arizona, California, New Mexico, and the Pecos-Rio Grande section of Texas, including El Paso, Hudspeth, Brewster, Crane, Culbertson, Ector, Loving, Jeff Davis, Pecos, Presidio, Reed, Ward, Winkler, and Terrell Counties, comprised the far western region.



U.S. DEPARTMENT OF AGRICULTURE NEG. 17000 PRODUCTION AND MARKETING ADMINISTRATION

Figure 1. – LOCATION OF COTTON GINS SELECTED FOR THE STUDY OF COTTONSEED MARKETING IN THE UNITED STATES, SEASON OF 1947-48

Ginners, however, seldom visit mills to sell seed. Instead, buyers for mills customarily complete transactions with ginners by wire or telephone or visit the ginners in person.

During 1947-48, the slightly more than 1,000,000 cotton farms utilized the services of 8,272 gins (table 2). These gins supplied a total of 346 oil mills with cottonseed. The number of active gins and oil mills has decreased considerably in recent years. In 1937-38, only 10-years prior to the season of study, 12,838 gins and 466 oil mills were in active operation.

Production of cottonseed during the 1947-48 season totaled about 4.7 million tons, a volume very similar to the average seasonal production of approximately 4.6 million tons during the 10 seasons, 1938-39 through 1947-48. With practically identical production, however, the farm value of the cottonseed produced in 1947-48 totaled about $402,000,000 and was approximately twice as great as the annual average for the 10-year period ending in 1947-48.

During 1947-48, Texas, Mississippi, Arkansas, and Alabama led in cottonseed production in the order named and together produced about 60 percent of the total volume of seed. The combined production of California, Georgia, Louisiana, North Carolina, South Carolina, and Tennessee accounted for about 29 percent of the crop.

DISPOSITION OF COTTONSEED BY GROWERS

Time and Place of Sale

Most cottonseed are sold by growers to ginners immediately after ginning. Several factors establish ginners as the most logical and almost exclusive outlet for growers in the sale of seed. The bulky nature of seed makes repeated handling both laborious and expensive, public facilities for storing seed commercially are practically nonexistent, and the perishable quality of seed of high-moisture content makes large-scale storage on the farm impractical. Revenue derived from immediate sale of seed at gins provides growers with funds to pay ginning charges and other seasonal expenses. Also, as a rule, cottonseed oil mills do not accept seed in lots of less than 5 tons.

During the 1947-48 season, about 87 percent of the seed were sold by growers, the remainder being utilized on farms chiefly for planting seed (table 3). The dominant position of ginners as a market outlet for growers in the sale of seed was emphasized by the fact that growers sold 86 percent of the crop to ginners and only 1 percent to cottonseed oil mills.

Table 2. -- Comparative cottonseed production and receipts at oil mills, and the numbers of active gins and oil mills, by State and region, season 1947-48 1/

State and region	Cottonseed produced	Cottonseed received at mills	Active gins	Active oil mills
	1,000 tons	1,000 tons	Number	Number
Alabama	348	238	814	27
Florida	2/	2/	8	1
Georgia	253	300	710	38
North Carolina	179	162	535	30
South Carolina	252	170	575	25
Virginia	2/	2/	38	-
Southeastern region	1,032	870	2,680	121
Arkansas	492	403	872	23
Illinois	2/	2/	3	1
Kentucky	2/	2/	8	-
Louisiana	202	140	453	14
Mississippi	603	523	1,096	40
Missouri	130	2/	174	3
Tennessee	198	335	377	13
South central region	1,625	1,401	2,983	94
Oklahoma	135	145	440	18
Texas	1,371	1,217	1,932	96
Southwestern region	1,506	1,362	2,372	114
Arizona	93	91	45	4
California	295	252	118	7
New Mexico	67	2/	39	2
Texas, Pecos-Rio Grande area	52	3/	35	4
Far western region	507	343	237	17
All other States	13	95	-	-
United States	4,683	4,071	8,272	346

1/ As reported by the Bureau of the Census.
2/ Included in "All other States" to avoid disclosure of operations of individual establishments.
3/ Included in Texas.

Table 3.--Relative importance of specified practices followed by growers in marketing cottonseed, by regions, season 1947-48

Grower's practice in marketing cottonseed	Proportion of cottonseed produced in -				
	Southeastern region	South central region	Southwestern region	Far western region	United States
	Percent	Percent	Percent	Percent	Percent
Sold to ginner immediately after ginning	78	85	83	95	84
Sold to ginner after storage at gin	7	2	1/	1/	2
Sold to ginner after storage at farm	1	1/	1/	-	1/
Sold to oil mill after storage at farm	2	1/	1	-	1
Used on farm	12	13	16	5	13
Total	100	100	100	100	100

1/ Less than 0.5 percent.

Growers in the far western region marketed 95 percent of all seed as compared with a low of 84 percent of the seed being sold by growers in the southwestern region. Proportions of seed marketed by growers in other regions approximately equaled the Belt-wide average.

Most seed transactions between growers and ginners were completed immediately after ginning. Ginners acquired 84 percent of the total crop at time of ginning and 2 percent was stored at the gins for growers and purchased by ginners later. Actually, ginners acquire title to some seed before ginning since growers usually sell a very small part of the cotton crop to ginners in the form of seed cotton. About 7 percent of the seed carried home by growers eventually was sold as it proved to be excess to farm needs. Such sales, in most cases, were made late in the season after gins had closed down. The 1 percent of the crop sold by growers to oil mills consisted almost entirely of such late season sales.

Practices of Growers in Selling to Ginners

Since growers are limited for all practical purposes to one outlet in selling cottonseed, selection of buyers for seed involves

merely a choice between available gins. Generally, ginners within a locality quote comparable prices for seed. In selecting gins, therefore, most growers consider a number of factors such as convenience of location, the gin equipment and technical skill of the ginner, charges made for ginning and related services, and prices offered for the baled lint as well as for seed. In certain sections, some growers also obtain production credit from ginners thereby obligating themselves to patronize such gins.

Although the number of active gins has decreased appreciably in recent years, most gins serve only a few hundred customers representing a rather compact territory. During the 1947-48 season, estimates indicated that growers traveled only about 5 miles on the average in reaching the gins. 2/ Also it was estimated that 70 percent of the crop was produced by growers who patronized only one gin during the course of that season, thus showing that growers after selecting a gin tended to abide by that choice.

Growers usually are well informed as to prices being offered locally for cottonseed since most gins publicly post the current price on a blackboard or sign. If growers decide to sell the seed, settlement is usually made as soon as ginning has been completed and the weight of seed determined. Payment normally is made by check, a deduction having been made for the charge for ginning and baling the lint. Unlike procedures followed in the sale of some farm commodities, growers customarily do not bargain publicly with ginners as to price but accept the posted-figures. In a few instances, however, some large scale growers receive additional price payments in line with agreements arranged privately with ginners.

PRACTICES OF GINNERS IN BUYING AND STORING COTTONSEED

Organization of the Ginning Industry

A modern cotton gin represents a multiple enterprise providing ginning of the seed cotton, packaging of the lint, the purchase of cottonseed, and frequently of the lint as well. Often other activities are conducted on the gin premises.

Financial Importance of Seed Buying Activities in Gin Operation

The nature and importance of side line activities engaged in by ginners, however, vary greatly between different parts of the

2/ Soxman, R. C. THE MARKETING OF COTTON IN PRODUCERS' LOCAL MARKETS. Cotton Branch, Production and Marketing Administration, U. S. Dept. of Agr., 1949. (Processed.)

Belt. In some localities, ginners neither buy the baled lint nor conduct related enterprises that yield any important revenue. Since practically all ginners buy and sell cottonseed, this activity, on the whole, represents the major commercial side line associated with gin operation.

During seasons when charges established for ginning have been low relative to costs of gin operation, many ginners have depended upon income from cottonseed transactions for whatever profit was realized for the season. This situation particularly has occurred in the case of gins obtaining an average or less than average volume of business.

Integration of Ginning with Cottonseed Processing

Since oil mills depend almost exclusively upon gins as the source of supply for seed, it would be expected that a significant proportion of gin facilities would be owned or operated by cottonseed processors. Although ginning has been integrated with oil milling to an appreciable extent, most gins are operated by owners whose principal business is ginning.

During the 1947-48 season, only 11 percent of the total volume of cottonseed entering commercial channels was reported as being purchased by gins owned outright by oil mills (table 4). An additional 1 percent of the volume of seed going to mills was purchased by gins either partly owned or leased by mills, making a total of 12 percent of the crop acquired by gins operating as a subsidiary segment of the oil milling industry. Slightly more than one-fifth, however, of the seed marketed in the southwestern region and about two-fifths of that in the far western region was handled by gins owned or leased by oil mills.

The chief tie-in between gins and mills was the fact that some gins borrowed money from mills for operating capital. Approximately 19 percent of the seed entering marketing channels was handled by gins that were financed by oil mills and generally were obligated to deliver seed to the mills advancing such loans. In the south central region, about 31 percent of the seed was marketed by gins that were financially indebted to oil mills.

For the Belt as a whole, however, 69 percent of the seed originated from gins maintaining an independent status in dealings with oil mills. The proportionate volume of such independent trading by regions ranged from a low of 61 percent of the seed in the far western region to a high of 72 percent in the southeastern region.

Table 4.--Proportions of cottonseed purchased by cotton gins according to specified financial relationships with cottonseed oil mills, by regions, season 1947-48

Relationship of gins to cottonseed oil mills	Proportion of seed purchased by gins in the--				
	Southeastern region	South central region	Southwestern region	Far western region	United States
	Percent	Percent	Percent	Percent	Percent
Owned by oil mill	9	4	20	36	11
Partly owned or leased by oil mill	2	1/	2	3	1
Financed by oil mill	17	31	9	-	19
No financial relationship to oil mill	72	65	69	61	69
Total	100	100	100	100	100

1/ Less than 0.5 percent.

Although oil mills owned an appreciable number of gins, cotton growers operated a somewhat similar proportion of gins. In 1947, about one-tenth of the seed was marketed by gins controlled cooperatively by groups of growers (table 5). Cooperative gins, however, were found almost entirely in the southwestern and far western regions. The growth of cooperative gin operation in the past few decades likely has been influenced not only by the desire of growers to receive ginning services at lower cost but also by their wish to share in whatever profits might arise through cottonseed transactions. Although 90 percent of the seed was acquired by gins operated by individuals, partnerships, or corporations, investment in some of these gins presumably was held by producers. Also, about 4 percent of the total volume of seed was handled by gins that were operated privately by large scale growers, such plantation gins being located principally in the south central region.

Volume of Cottonseed Purchased by Ginners from Growers

As indicated previously ginners bought all the seed at the time of ginning except for a small volume purchased after storage at the gin or on the farm.

Table 5.--Proportions of cottonseed marketed by gins according to specified form of gin ownership, by regions, season 1947-48

Region	Proportion of cottonseed marketed by gins operated--				
	By individuals	As partnerships	Cooperatively	By corporations	By all types
	Percent	Percent	Percent	Percent	Percent
Southeastern	54	25	1/	21	100
South central	40	31	5	24	100
Southwestern	35	23	19	23	100
Far western	6	15	16	63	100
United States	39	26	10	25	100

1/ Less than 0.5 percent.

During the 1947-48 season, gins turned out an average of 566 tons of cottonseed per gin and purchased 489 tons of this total from growers (table 6). The volume of seed produced per gin increased somewhat from the southeastern region westward to the southwestern part of the Belt, but in the far western region the volume was from about three to five times greater than that of other regions. Gins in the southeastern region, on an average, ginned 388 tons of seed and purchased 333 tons, as compared with 2,139 tons ginned and 2,025 tons purchased per gin in the far western region.

Factors Influencing Prices Paid by Ginners to Growers for Cottonseed

Prices offered for cottonseed at the gin level are based primarily on prices quoted by nearby mills. But the calculation of buying prices posted for seed by ginners, at times, becomes an involved matter on account of certain conditions peculiar to the marketing of cottonseed and the organization of the ginning industry.

Related Business Activities of Ginners

The obvious goal of ginners is to realize a fair return from the combined enterprises associated with gin operation. Circumstances frequently encourage ginners to perform some services at about cost and to increase the margin of revenue from other phases of the business. Since all ginners normally trade in cotton-

seed, attempts to offset unfavorable income from ginning or other services by offering prices for seed relatively lower than market prices are not uncommon. In other cases, comparatively high prices are quoted for seed to attract an additional volume of business in the hope that increased income from other enterprises may produce a favorable net revenue.

Table 6.--Average volumes of cottonseed ginned and purchased per gin, by regions, season 1947-48

Region	Average volume of cottonseed--	
	Ginned per gin	Purchased per gin
	Tons	Tons
Southeastern	388	333
South central	546	475
Southwestern	635	530
Far western	2,139	2,025
United States	566	489

Considerations of Ginners in Establishing Prices Paid Growers

Under most circumstances, the spread between prices quoted to ginners by mills and prices offered by ginners to growers represents a fairly consistent figure such as is believed by ginners to be necessary in defraying marketing costs and in providing a profit. In actual practice, however, competitive pressure from neighboring gins, practices adopted by ginners in arranging sales to mills, as well as other factors, sometimes form the major consideration in the calculation of prices posted at gins.

During the 1947-48 season, about 56 percent of the ginners stated that prices paid growers were established primarily by deducting a fixed amount from prices currently being paid by mills (table 7). In the southwestern region slightly more than three-fourths of the ginners determined buying prices in this manner. In other regions, this method of price determination was practiced by almost one-half of the ginners. For the Belt as a whole, ginners who followed this method reported that they deducted $6.43 per ton from mill prices to arrive at gin prices. The extent of such margins were progressively greater by regions ranging from west to east. In the far western region the spread was $3.00 per

ton, as compared with an average of $8.04 per ton in the southeastern region where ginning charges were at the lowest level and the volume of ginning received per gin was the smallest for the Belt. 3/

Table 7.--Proportions of ginners designating specified reasons as being of primary importance in establishing cottonseed prices paid to growers at gins, and average estimated margins, by regions, season 1947-48

Region	Proportion of ginners giving primary consideration to--							
	Current mill price less a stated margin		Competition	Quality of seed	Gin contract with oil mill	No reason given	Total
	Pct.	Av. margin per ton					
	Pct.	Dollars	Pct.	Pct.	Pct.	Pct.	Pct.
Southeastern	46	8.04	43	8	2	1	100
South central	49	6.43	47	4	-	-	100
Southwestern	77	6.05	19	-	3	1	100
Far western	37	3.00	33	6	24	-	100
United States	56	6.43	38	4	2	1/	100

1/ Less than 0.5 percent.

Competition in the ginning industry was cited by 38 percent of all ginners as the primary consideration in establishing prices paid to growers. Such pressure was greater in the eastern half of the Belt than in the western half. In the southeastern and south central regions, about 43 and 47 percent, respectively, of the ginners reported that they were guided principally by competition in pricing seed, in contrast with about one-fifth of the ginners in the southwestern region and approximately one-third of those in the far western region.

Only 4 percent of ginners related seed prices primarily to seed quality since no means were available for grading individual lots of cottonseed at gins. About 2 percent of the ginners paid prices that were determined largely by prices specified in advance

3/ GINNING CHARGES AND SEED COTTON WEIGHT, Cotton Branch, Production and Marketing Administration, U. S. Dept. of Agr., June 1949. (Processed.)

contracts made with mills for the delivery of stated amounts of seed. Although advance contracts were a minor factor for the Belt as a whole, almost one-fourth of the ginners in the far western region were governed by such contracts in establishing prices paid growers for seed.

Ginners customarily paid all customers the publicly established price for seed although in some cases a few growers received higher prices through private agreements. Such growers usually received the quoted price at time of sale but were paid a later allowance based upon a previously agreed additional amount per ton.

During the 1947-48 season, 5 percent of the ginners reported that they made such private arrangements but most of these ginners were located in the southeastern and south central regions (table 8). Since ginners extended such special price inducements to only a few growers operating on a large scale, only about 1 percent of the total seed purchases by ginners were subject to added allowances. During the season of study, the scale of allowances most commonly ranged between $3 and $4 per ton. Ginners indicated that the prevalence of this practice had declined somewhat in recent years.

Table 8.--Extent of special price allowances made to growers by ginners, by regions, season 1947-48

Region	Proportion of ginners making allowances	Proportion of total seed purchased on which allowances made
	Percent	Percent
Southeastern	10	2
South central	5	2
Southwestern	1/	1/
Far western	3	1/
United States	5	1

1/ Less than 0.5 percent.

Methods Used in Determining Seed Weights at Gins

The use of accurate weights in the settlement of transactions for any commodity priced in terms of weight is essential for equitable and efficient marketing. For cottonseed, only a small part of the trading between ginners and growers is settled on the basis of weights determined by use of scales, and there is little or no supervision by disinterested agencies with respect to the accuracy of such scales or of such weighing. Weights of the seed purchased by ginners from growers are arrived at principally by estimation, the particular formula being a matter of local custom.

Estimation of weights frequently has resulted in appreciable inaccuracies for individual lots of seed, and less commonly for the entire volume of trading for the season at some gins. Such inaccuracies in weights often cause returns to growers to be greater or smaller than posted gin prices would indicate. Where weight inaccuracies are somewhat consistent, ginners presumably adjust prices to levels providing compensation for the degree of error.

During the 1947-48 season, about 62 percent of the total volume of seed purchases by ginners from growers were made on the basis of estimated weights, the remainder being acquired in terms of scale weights (table 9). In the south central region about 86 percent and in the far western region approximately 94 percent of cottonseed transactions between ginners and growers were settled on estimated weights. Seed scales were used to an appreciable extent, however, in the southeastern and southwestern regions where slightly more than one-half and about two-thirds, respectively, of the seed were bought by ginners from growers on scale weights.

Ginners usually estimated weights of seed produced by individual loads of seed cotton by weighing the seed cotton and deducting locally agreed upon allowances to compensate for weight of lint and foreign matter. The simplest form of such estimation was merely to deduct the gross weight of the bale from that of the seed cotton. Practically all ginners estimating seed weights in the southeastern region followed this method and about one-fourth of the seed in the south central region was bought by ginners on the basis of such estimates. The most common form of estimation was to deduct both the weight of the bale and a specified number of pounds from the seed cotton weight. About 88 percent of transactions between ginners and growers in the far western region and 49 percent of those in the south central region were settled in this manner. In the southwestern region about one-fourth of the purchases by ginners were based on weights determined by applying a percentage figure to the seed cotton weight.

Table 9.--Proportions of cottonseed purchased by ginners from growers according to specified methods of determining cottonseed weights, by regions, season 1947-48

Method of weight determination	Proportion of cottonseed purchased by ginners in the--				
	Southeastern region	South central region	Southwestern region	Far western region	United States
	Percent	Percent	Percent	Percent	Percent
Seed scales	52	14	67	6	38
Seed cotton load weight minus gross weight of bale	42	23	1	-	17
Seed cotton load weight minus gross weight of bale minus a given number of pounds or a percentage of seed cotton load weight	1	49	1	88	29
Seed cotton load weight minus actual weight of trash minus bale weight	1	1	1/	-	1/
Estimated as percentage of seed cotton load weight	1	1	25	-	8
Bale weight multiplied by a seed lint ratio	2	8	6	6	6
Other methods 2/	1	4	1/	-	2
All methods	100	100	100	100	100

1/ Less than 0.5 percent.
2/ Includes various minor methods of estimation, most of which were derived from bale weights.

About one-tenth of the estimates were calculated from the weight of the bale of lint by use of a seed-lint ratio. This method was used to some extent in all parts of the Belt but was not important in any one region.

Ginners customarily sell cottonseed to oil mills subject to weights determined on scales at mills. During 1947-48, ginners estimated that differences between mill weights and weights determined at gins in purchasing from growers resulted in a loss of 6 pounds per ton (table 10). On the whole, the accuracy of

weighing performed on gin scales and that of weights estimated by ginners was identical, but in all regions except the Southeast seed scales gave reasonably accurate results while some methods of estimation produced appreciable losses whereever used.

Table 10.--Average number of pounds per ton gained or lost between purchase and sales weights by gins according to different methods of determining cottonseed purchase weight, by regions, season 1947-48

Method of weight determination	Average gain (+) or loss (-) in pounds per ton in the--				
	Southeastern region	South central region	Southwestern region	Far western region	United States
	Pounds	Pounds	Pounds	Pounds	Pounds
Seed scales	-20	+ 3	- 2	+ 5	- 6
Seed cotton load weight minus gross weight of bale	-54	-43	-14	-	-48
Seed cotton load weight minus gross weight of bale minus a given number of pounds or a percentage of seed cotton load weight	-36	+ 7	- 6	+ 7	+ 7
Seed cotton load weight minus actual weight of trash minus bale weight	+10	-18	-	-	- 5
Estimated as percentage of seed cotton load weight	-34	-18	+51	-	+45
Bale weight multiplied by a seed lint ratio	-33	+ 4	+ 6	+ 8	+ 2
Other methods 1/	-29	- 2	+ 2	-	- 5
All methods	-37	- 6	+12	+ 7	- 6

1/ Includes various minor methods of estimation, most of which are derived from bale weights.

Ginners in the far western and southwestern regions reported gains of 7 pounds and 12 pounds per ton, respectively, between buying and selling weights. On the other hand, ginners in the south central region indicated an average loss of 6 pounds per ton, and in the southeastern region losses were estimated at 37 pounds per ton or very nearly 2 percent of the total weight of seed purchased. In cases where weights used in buying at gins varied appreciably from those accepted in selling, this difference had a material

influence on the level of seed prices quoted by ginners to growers.

Ginners using seed scales in the southeastern region showed a loss of 20 pounds per ton. Such loss was apparently influenced by the relatively high moisture content of seed at time of ginning with subsequent losses in moisture resulting from storage at gins and by losses in transit. Ginners who did not use seed scales in this region, as a rule estimated weight by deducting the gross weight of the bale from the weight of the seed cotton. This method resulted in an average loss of 54 pounds per ton. This same method also was used by about one-fourth of the ginners in the south central region and was responsible for most losses in weight suffered by ginners in that part of the Belt.

The gain in weights realized by ginners in the southwestern region was occasioned by the fact that those ginners who did not use seed scales estimated weights on a basis that provided an average gain of 51 pounds per ton. In the far western region practically all seed weights were estimated by a method that yielded an average gain of 7 pounds per ton.

About 31 percent of the ginners across the Belt indicated that they sold almost exactly the same total weight of cottonseed as they pruchased (table 11). Approximately 18 percent of the ginners realized a gain in weights but 51 percent reported losses in weight for the season.

Table 11.--Proportions of ginners reporting gains or losses between weights used in buying cottonseed from growers and in selling to oil mills, by regions, season 1947-48

Region	Proportion of ginners reporting--			
	No gain or loss	Gain in weight	Loss in weight	Total
	Percent	Percent	Percent	Percent
Southeastern	19	1	80	100
South central	37	22	41	100
Southwestern	36	29	35	100
Far western	42	46	12	100
United States	31	18	51	100

The proportion of ginners breaking even on weights ranged from about one-fifth of those in the southeastern region to slightly more than two-fifths of those in the far western region. On the other hand, 80 percent of the ginners in the southeastern region were faced with losses between buying and selling weights as contrasted with only 12 percent in the far western region. Only 1 percent of the ginners in the southeastern region achieved a gain in weights, as compared with 22 to 46 percent of the ginners in other regions. On the whole, ginners in the western part of the Belt utilized methods of determining buying weights that either were generally more accurate or more favorable to the ginner than did ginners in the eastern part.

About one-third of the ginners who reported a loss between buying and selling weights were unable to offer any explanation of this loss, another one-third stated that losses were caused by unfavorable methods used in estimating weights, and most of the remainder attributed losses to a decrease in moisture content of seed while in storage at the gin or to losses in transit. Loss in weight of seed from loss in moisture content of the seed did not always result in a financial loss to the ginner since generally there was a compensating gain in the grade of the seed.

Of those ginners indicating gain between buying and selling weights, a majority stated that gains resulted from the use of favorable methods of weight estimation. Some few attributed gains in weight to improperly adjusted seed scales.

The accurate determination of cottonseed weights at gins would benefit both ginners and growers and is essential to an efficient system of marketing. Apparently such accuracy will require the use of properly adjusted scales operated in a competent manner. Such weighing preferably would include periodic testing of the accuracy of the scales and their use. Although only about 38 percent of the seed marketed in 1947 was purchased from growers on scale weights, improvement in this direction apparently has been proceeding at a rather marked rate. Available information indicates that only about 25 percent of the seed from the 1944 crop and about 30 percent of the 1946 crop were purchased from growers on scale weights. 4/ Cottonseed is marketed on the basis of estimated weights in some areas because of a reluctance on the part of either growers or ginners to use seed scales. In some localities growers prefer to trade on estimated weights, believing that the local method of estimation operates to his advantage. In other communities, ginners oppose the use of seed scales because of the fact

4/ Roberts, A. L. and Fortenberry, A. J. CHARGES FOR GINNING COTTON, Cotton Branch, Production and Marketing Administration, U. S. Dept. of Agr., September 1947. (Processed.)

that the estimation of weights operates in their favor.

Storage of Cottonseed at Gins

At most gins cottonseed usually is held in storage for very short intervals of time after purchase from growers. Frequently, seed are held only until a sufficient amount is accumulated for shipment. In some cases seed are moved directly from gins to rail cars, trucks, or into the storage facilities of processors where gins are located adjacent to mills. The perishable nature of cottonseed and the considerable investment required in financing ownership of large amounts of seed influence the rapidity of this movement from gins to mills. Practically all gins, however, perform some storage of seed and generally this operation is conducted through the use of specially designed facilities termed "seed houses".

Facilities for Storage of Cottonseed at Gins

During the 1947-48 season, 95 percent of the active gins had houses for the storage of cottonseed, 90 percent having 1 house and 5 percent utilizing 2 seed houses (table 12). Gins requiring 2 seed houses were most common in the south central region where about 1 gin in every 11 reported having 2 buildings for seed storage. Of the 5 percent of gins operating without any storage buildings for seed, most of such gins were located in the far western region where nearly three-fifths of the gins stored seed in the open on concrete-covered surfaces or transferred seed directly from the gin to mill seed house.

Table 12.--Proportions of gins having specified number of cottonseed storage houses, by regions, season 1947-48

Number of seed storage houses	Proportion of gins in the--				
	Southeastern region	South central region	Southwestern region	Far western region.	United States
	Percent	Percent	Percent	Percent	Percent
No seed house	5	2	2	57	5
One seed house	91	88	95	37	90
Two seed houses	4	9	3	6	5
Three or more seed houses	1/	1	-	-	1/
Total	100	100	100	100	100

1/ Less than 0.5 percent.

Some gins having storage facilities for seed did not provide large buildings but instead, used bins large enough to hold the seed from 1 to 2 days ginnings. Such bins usually were constructed so that trucks could be driven underneath and loaded by releasing a trap-door or chute.

Cottonseed storage houses at gins represented four general types of construction: (1) Steel or brick, (2) steel with wood frame, (3) wood with steel roof, and (4) all wood. About 85 percent of such buildings either were steel with wood frame or wood with steel roof (table 13). About 9 percent were all wood and only 6 percent were all steel or brick.

Table 13.--Proportions of specified types of seed storage houses at gins, by regions, season 1947-48

Type of seed house	Proportion of gin seed storage houses in the--				
	Southeastern region	South central region	Southwestern region	Far western region	United States
	Percent	Percent	Percent	Percent	Percent
Steel or brick	5	5	9	32	6
Steel with wood frame	35	35	56	48	41
Wood with steel top	45	52	32	12	44
All wood	15	8	3	8	9
All types	100	100	100	100	100

Of those gins in the far western region that utilize seed houses, about one-third had houses of all steel or brick construction, a proportion far greater than for any other region. Seed storage facilities of all wood construction were most common at gins in the southeastern region.

For the Belt as a whole, the age of seed houses at gins averaged 14 years. Most ginners considered their seed houses to be in good to excellent condition.

Most gins had seed houses with capacities considerably in excess of usual storage requirements. During the 1947-48 season, capacities of seed storage house at gins maintaining such facilities averaged 117 tons per gin (table 14). Storage capacities per gin

on the average varied between 110 to 112 tons in all regions except the southeastern, where ginners with seed houses estimated average storage capacities at 134 tons.

Table 14.--Available storage capacity for cottonseed at gins and proportion of crop for which gin storage was available, by regions, season 1947-48

Region	Gins having seed storage houses		Proportion of crop for which gin storage was available
	Percentage of total gins	Average capacity per gin	
	Percent	Tons	Percent
Southeastern	95	134	33
South central	98	111	20
Southwestern	98	112	17
Far western	43	110	2
United States	95	117	20

The use of seed storage houses at gins to full capacity could have resulted in the storage of about one-fifth of the cottonseed crop produced in 1947-48. The proportion of the total crop that could have been stored in gin seed houses at one time decreased from the eastern to the western parts of the Belt. In the southeastern region, where weather conditions usually necessitated storage of seed in houses, as much as one-third of the crop could have been stored at gins. On the other hand only about 2 percent of the crop produced in the far western region could have been stored in houses at gins at one time. The large tonnage of cottonseed produced per gin, and the greater ulitilization of open storage in the far western region accounted for the small amount of seed storage space relative to the total crop produced.

Period of Storage at Gins

At times of ginning about 86 percent of the seed purchased by ginners from growers during the 1947-48 season was conveyed directly into seed houses for storage (table 15). Another 3 percent of the seed was stored at gins but was placed on concrete-covered areas in the open on gin yards. The remaining 11 percent of the seed was moved directly into rail cars, trucks, or into storage houses of adjacent oil mills.

Table 15.--Proportions of cottonseed, purchased by ginners, remaining in specified types of storage for designated periods of time, by regions, season 1947-48

Type of storage and period of storage at gins	Proportion of seed purchased by ginners in the--				
	Southeastern region	South central region	Southwestern region	Far western region	United States
	Percent	Percent	Percent	Percent	Percent
Seed going directly to rail car, truck, or processors' storage facility	10	16	4	15	11
Seed stored in houses for:					
1 day or less	10	33	31	42	28
2 - 5 days	29	31	32	9	28
6 - 10 days	23	13	17	4	15
11 - 20 days	13	3	5	1	6
21 days or more	15	4	10	7	9
Seed stored in open	-	-	1	22	3
Total	100	100	100	100	100

Although 86 percent of the seed purchased by ginners was placed in seed houses at gins for storage, most of such seed remained in storage for only very short periods of time. Of the seed conveyed into houses for storage, very nearly one-third was removed within 24 hours and about another third was out within 5 days. About one-fourth of the seed remained in storage for a period of from 6 to 20 days and only one-tenth of the seed was held in gin seed houses for periods exceeding 20 days. Ginners in the southeastern region stored seed for longer periods of time than did ginners in other regions and about three-fifths of the seed placed in houses for storage remained for periods exceeding 5 days as compared with only one-third to one-fourth of the stored seed in other regions.

Seed were not stored in the open in the eastern half of the Cotton Belt because of possibility of damage by rain. Very small quantities were stored in the open in the southwestern region but in the far western region about 22 percent of the total volume of seed handled by ginners was stored in this manner usually on concrete slabs in gin yards. About one-half of the seed placed in open storage was moved from the gin within 5 days (table 16). Less than one-fourth of such seed remained at the gin for more than 20 days.

Table 16.--Proportions of cottonseed stored for specified periods in the open, far western region, season 1947-48

Period of open storage (days)	Percentage of marketed seed in far western region stored in open
	Percent
1 day	4
2 - 5 days	7
6 - 10 days	4
11 - 20 days	2
21 days or more	5
Total stored in open	22

A practice formerly quite common, but now comparatively rare, was for ginners to transport seed to oil mills for storage, the oil mills providing storage space but the ginners retaining ownership of the seed. During the 1947-48 season only about 3 percent of the oil mills provided this service to ginners and even in such cases only small volumes of seed were occasionally accepted for storage from a gin.

PRACTICES OF GINNERS IN SELLING COTTONSEED

Outlets of Ginners in Selling Cottonseed

During the 1947-48 season, ginners sold approximately 98 percent of their purchases of cottonseed to oil mills for processing purposes, the remainder being resold to growers for planting seed (table 17). Although volumes of seed disposed of by ginners for planting purposes were relatively minor in all regions, ginners in the southeastern region sold proportionately greater amounts of seed in this manner than did ginners in other sections of the Belt.

Table 17.--Proportions of cottonseed sold by gins for specified uses, by regions, season 1947-48

Region	Proportion of seed sold for crushing	Proportion of seed sold for planting	Total
	Percent	Percent	Percent
Southeastern	96	4	100
South central	98	2	100
Southwestern	99	1	100
Far western	98	2	100
United States	98	2	100

The ginner usually sells his cottonseed to one or two oil mills. During the 1947-48 season, about one-half of the ginners in the United States limited their sales to an oil mill in the locality (table 18). Sales were made to two mills in their respective regions by 29 percent of the ginners. The remaining one-fifth of the ginners sold to three or more mills. Of the ginners operating three-fourths of the gins in the far western region, each sold all seed to one mill in the vicinity. In this region ginning and processing were integrated to a greater extent than in other parts of the Belt. In the southeastern region where the number of gins with no financial tie-in with mills was relatively greatest, only 42 percent of ginners marketed all seed to one mill in the area.

Table 18.--Proportions of gins selling cottonseed to specified numbers of oil mills, by regions, season 1947-48

Number of oil mills to which gin sold seed	Proportion of gins selling seed in the--				
	Southeastern region	South Central region	Southwestern region	Far western region	United States
	Percent	Percent	Percent	Percent	Percent
One oil mill	42	58	49	76	51
Two oil mills	30	25	32	16	29
Three oil mills	19	11	11	5	13
Four or more oil mills	9	6	8	3	7
Total	100	100	100	100	100

Basis of Price Agreements Between Ginners and Oil Millers

Most cottonseed sold by ginners during the 1947-48 season were disposed of at prices currently in effect at the time of sale (table 19). About one-fifth of the seed, however, was sold on the basis of forward contracts or price agreements made for definite volumes of seed or for definite periods of time. During the season of study, a frequently rising market provided little incentive for ginners to sell seed prior to time of purchase. In seasons when market conditions were more uncertain than in 1947-48, proportionately greater volumes of sales by ginners through means of advance contracts might be expected.

Table 19.--Proportions of cottonseed sales by gins to oil mills according to method of price agreement, by regions, season 1947-48

Region	Proportion of seed sold on basis of--		Total
	Forward contract	Current price	
	Percent	Percent	Percent
Southeastern	10	90	100
South central	19	81	100
Southwestern	11	89	100
Far western	59	41	100
United States	20	80	100

Forward contracts with oil mills were used as a basis of sale by ginners to a considerably greater extent in the far western region than in other regions. Approximately three-fifths of the seed in that region was sold on contract or by agreement. In the southeastern and southwestern regions, only about one-tenth of the seed was sold on contract and in the south central region about one-fifth of the seed was marketed by ginners on such terms.

Seed are sometimes exchanged by growers at gins for cottonseed meal, a practice more popular when meal and other feedstuffs are scarce. Normally, ginners adopting this practice also make a similar exchange of seed for meal or other cottonseed products with the mills.

Approximately 6 percent of the seed marketed by ginners in 1947 was exchanged with mills for cottonseed meal or hulls (table 20). Sales on the basis of such exchanges were confined chiefly to the southeastern region where very nearly one-fifth of the seed was marketed by gins in that manner.

Table 20.--Proportions of cottonseed exchanged for meal by gins with oil mills, by regions, season 1947-48

Region	Proportion of seed exchanged for meal
	Percent
Southeastern	19
South central	4
Southwestern	1/
Far western	-
United States	6

1/ Less than 0.5 percent.

Practices in Shipping Cottonseed from Gins to Oil Mills

The loading of cottonseed at gins for movement to mills--an operation often involving the expenditure of considerable time and labor--and the actual transportation of the seed together represent a major service and the principal item of cost in marketing. Ginners sold seed almost exclusively to mills on f.o.b. gin point price terms but in many cases mills preferred not to send labor and equipment to gins to load and haul away the seed. In such instances ginners were granted additional payments to provide such services and either performed the loading and hauling or hired commercial truckers for such purposes.

Agencies Loading Cottonseed at Gins

Approximately 39 percent of the total volume of cottonseed sold by ginners to oil mills during the 1947-48 season was loaded at gins for shipment to oil mills by gin labor and about the same percentage was loaded by commercial truckers (table 21). Only about one-fifth

of the seed was loaded by labor supplied by mills. The small remainder of seed was moved directly as ginned from gin houses to storage facilities of nearby oil mills by pneumatic or screw conveyors.

Table 21.--Proportions of cottonseed loaded at gins by specified marketing agencies, by regions, season 1947-48

Marketing agency loading seed at gin	Proportion of cottonseed marketed in the--				
	Southeastern region	South central region	Southwestern region	Far western region	United States
	Percent	Percent	Percent	Percent	Percent
Gin labor	54	45	33	12	39
Commerical trucker	24	36	38	69	38
Mill labor	18	17	29	11	21
Conveyed directly to mill	4	2	-	8	2
Total	100	100	100	100	100

Slightly more than one-half of the seed in the southeastern region was loaded by employees of ginners but the practice was followed to a lesser extent across the Belt, decreasing to a point where only about one-tenth of the seed in the far western region was loaded by gin labor. Accordingly, services of commercial truckers were an increasingly important factor in loading operations from east to west, with only 24 percent of the seed being loaded by commercial truckers in the southeastern region as compared with 69 percent in the far western region. Oil mills performed loading most frequently in the southwestern region where 29 percent of the seed was loaded by mill employees.

Methods of Loading Cottonseed at Gins

Several methods were employed in loading seed into conveyances at gins. The most common, simplest, and fastest practice was the use of drop chutes or loading bins in which vehicles were driven under chutes of separate bins or built-in sections in large seed houses and received seed through trap doors. During the 1947-48 season, 45 percent of the seed was loaded in this manner (table 22). The next most important method of loading was by hand labor with forks which, in some instances, was a simple operation but in others

exceedingly laborious and slow, especially when seed were stored at a lower level than the body of the vehicle. Approximately 37 percent of the seed was loaded manually with forks. Mechanical conveyors utilizing either belts or screws were available at some gins and about 13 percent of the total volume of seed was moved from seed houses into vehicles by such devices. Pneumatic pipe lines were used in loading approximately 5 percent of the seed, this practice being followed frequently in loading rail cars directly from the gin house.

Table 22.--Proportions of cottonseed loaded at gins by specified methods, by regions, season 1947-48

Method of loading	Proportion of cottonseed loaded at gins in the--				
	Southeastern region	South central region	Southwestern region	Far western region	United States
	Percent	Percent	Percent	Percent	Percent
Fork	52	36	41	8	37
Chute	28	53	42	58	45
Belt or screw conveyor	12	4	17	28	13
Pneumatic conveyor	8	7	-	6	5
All methods	100	100	100	100	100

About 86 percent of the seed marketed by ginners in the far western region was loaded either from chutes or by mechanical conveyors with only 8 percent being handled manually with forks. In other regions, appreciable proportions of seed were loaded by forks, ranging from slightly more than one-third of the seed in the south central region to more than one-half of the seed in the southeastern region.

Transportation of Cottonseed from Gins to Mills

For a number of years, large capacity gins have tended to locate along highways or at major road junctions instead of favoring sites adjacent to rail lines as formerly. This fact coupled with the continuing scarcity of rail cars likely has caused the volume of seed moving from gin to mill by rail in recent seasons to be somewhat less than in prewar years.

During the 1947-48 season, 92 percent of the cottonseed was transported from gins by truck and only 6 percent moved by rail (table 23). The remaining 2 percent of the seed was moved as ginned directly from gin houses to adjacent storage facilities of processors.

Table 23.--Proportion of cottonseed transported from gins to oil mills by specified methods of transportation, by regions, season 1947-48

Method of transportation	Proportion transported from gins to mills in the--				
	Southeastern region	South central region	Southwestern region	Far western region	United States
	Percent	Percent	Percent	Percent	Percent
Gin truck	43	32	37	12	35
Commercial truck	19	37	34	67	36
Mill truck	26	18	28	8	21
All trucks	88	87	99	87	92
Rail	8	11	1	5	6
Direct to mill	4	2	-	8	2
All methods	100	100	100	100	100

Of that volume of seed moving by truck, slightly less than two-fifths was hauled by gin trucks, about the same proportion by commercial truckers, and the remainder by trucks operated by oil mills. Ginners hauled greater proportions of seed in the southeastern and southwestern regions than did other types of truck operators. In the far western and south central regions, commercial truckers were the major transportation agency.

Rail transportation, although a minor factor in the movement of seed in all regions, was used to a somewhat greater extent in the eastern part of the Belt than in the western part. In the southeastern and south central regions about 8 percent and 11 percent, respectively, of the seed was transported by rail, as compared with only 1 percent in the southwestern and 5 percent in the far western regions.

The average load of cottonseed carried from gin to mill by motor vehicle was 9 tons and loadings per rail car averaged 30 tons

(table 24). As a rule, trucks used by ginners had slightly smaller capacities than those operated by oil mills and commercial truckers. Ginners in all regions utilized trucks carrying an average load of about 8 tons. Both mill trucks and commercial trucks hauled approximately 10 tons per load, capacities on the average being very similar in all regions except the far western region, where such trucks handled loads about two times greater than in other regions. Rail car loadings were slightly greater, on the whole, in the southwestern and far western regions, averaging about 35 tons as compared with an average of approximately 29 tons per car in the southeastern and south central regions.

Table 24.--Average sizes of shipments of cottonseed from gins to oil mills by specified methods of transportation, by regions, season 1947-48

Method of transportation	Average size of cottonseed shipments in the--				
	Southeastern region	South central region	Southwestern region	Far western region	United States
	Tons	Tons	Tons	Tons	Tons
Gin truck	8	8	7	8	8
Mill truck	11	10	9	20	10
Commercial truck	10	9	8	14	10
All trucks	9	9	8	14	9
Rail	28	30	36	34	30
All methods	11	11	8	15	10

Distances of haul from gins to mills are influenced by the relative location of gins and oil mills, and by the condition of the crop during each particular season. In some areas, the cotton crop may be below normal and oil mills in these areas may be forced to buy cottonseed beyond their usual purchasing territory in order to obtain adequate supplies for economical operation.

During the 1947-48 season, seed were transported an average distance of 43 miles in moving from gins to mills (table 25). Cottonseed were hauled 59 miles on the average in the far western region compared with 37 miles, 41 miles, and 45 miles in the southwestern, south central, and southeastern regions, respectively.

Table 25.--Average shipping distances for cottonseed from gins to oil mills by specified methods of transportation, by regions, season 1947-48

Method of transportation	Average distance of shipment of cottonseed in the--				
	Southeastern region	South central region	Southwestern region	Far western region	United States
	Miles	Miles	Miles	Miles	Miles
Gin truck	37	30	24	31	30
Mill truck	45	46	47	75	47
Commercial truck	51	39	41	55	45
All trucks	42	37	36	52	40
Rail	74	75	106	159	85
All methods	45	41	37	59	43

Trucks hauled seed an average distance of 40 miles; those owned by commercial truckers and mills moving seed generally over routes about 50 percent longer than trucks operated by ginners. Seed that had to move exceptionally long distances to reach mills usually were transported by rail. Distances covered in shipments from gins to mills by rail averaged 85 miles or slightly more than two times greater than the average mileage represented by truck movements.

COSTS IN MARKETING COTTONSEED BY GINNERS

An appraisal of the total costs of marketing cottonseed by ginners would involve analyses of expenses both solely related to marketing of seed as well as those jointly associated with the seed account and other gin activities. The multi-enterprise structure of the present-day ginning industry greatly complicates a cost analysis of any one particular phase of operation. In the course of this preliminary Belt-wide study of cottonseed marketing, no attempt was made to explore the nature and extent of all costs that could be attributed to the handling of seed at gins. Information, however, was collected with respect to certain items of direct marketing costs that could be obtained readily from gin records or on the basis of estimates made by ginners.

Some Costs of Marketing at the Gin Level

Expenses of ginners which were directly related to the marketing of cottonseed included storage of the seed, bank expenses in buying and selling seed, and losses accounted for by differences in the weights of cottonseed bought and sold. When ginners transported cottonseed to the oil mills, costs were involved but normally such expenses were more than offset by transportation allowances granted by the mills. In some instances, however, ginners did experience financial losses in transporting seed.

Expenses associated with the storage of cottonseed at the gin represented the major item of marketing cost for ginners and totaled 45 cents per ton on an average during the 1947-48 season (table 26). Losses resulting from differences in weights of cottonseed bought and sold averaged about 30 cents per ton. Minor banking costs involved in making and collecting payment for seed transactions amounted to 2 cents per ton.

Table 26.--Certain costs incurred by ginners in marketing cottonseed in the United States, season 1947-48

Item of cost	Cost per ton
	Cents
Storage	45
Difference in weight of cottonseed bought and sold	30
Bank exchange expense	2

According to estimates of ginners, charges made by banks for exchange drafts and checks required in the purchases and sales of cottonseed were 2 cents per ton across the Belt. Only slightly more than one out of every four ginners reported expenses of this nature, this expense averaging 10 cents per ton at such gins.

Costs to ginners for storing cottonseed consisted of expenses in connection with the maintenance of storage facilities and insurance costs. These costs included interest on the investment

in storage houses 5/, depreciation on such houses, repairs, and insurance both on the seed house and seed in storage. Items of expense pertaining to the seed house were especially important on a per ton basis when a substantial investment had been made in the storage house and the volume of seed marketed was low.

According to information provided by ginners, costs of storing cottonseed at gins averaged 45 cents per ton for the entire volume of seed marketed during the 1947-48 season (table 27). Such costs were greatest in the southeastern region, averaging 62 cents per ton for the entire volume of seed handled in the region. In the southeastern region, ginners on the whole not only maintained more storage facilities with capacities exceeding requirements, but they also stored relatively larger amounts of seed for longer periods of time than elsewhere in the Belt. The minimum average cost for storing seed at gins was the 17 cents per ton reported by ginners in the far western region where practically one-fourth of the seed was placed in open storage and more than one-half of the gins did not have a seed house. In the south central and southwestern regions, costs of storage were similar to the Belt-wide average, amounting to 47 and 44 cents per ton, respectively.

Very nearly one-half of costs represented in storing cottonseed at gins consisted of expenses necessary in insuring seed houses and the seed while in storage. Although about one-fourth of the seed was not insured during storage and approximately one-fifth of the ginners did not carry insurance on seed houses, such ginners, for the purpose of this study, were assumed to be carrying these risks

5/ Replacement values of gin seed houses were determined by a square foot floor space valuation as follows:

	Dollars per sq. ft.
All steel or brick buildings	3.00
Steel covered wood frame buildings	2.00
Wood buildings with steel tops	1.75
All wood buildings	1.50

Yearly depreciation values of the buildings were determined by using the following table with replacement values of the building:

	Percent
All steel or brick buildings	3
Steel covered wood frame buildings	4
Wood buildings with steel tops	5
All wood buildings	6

Allowances for interest on investments in seed storage facilities were made at 4 percent of present values which were determined by depreciating replacement values at rates given above. For buildings more than 10 years of age, total depreciations were determined by the general condition of buildings as well as by age.

and were allocated costs for insurance proportionate to their individual risks. On account of high seed values during the 1947-48 season, average costs of insuring seed were 14 cents per ton as compared with costs of insurance on the seed houses equivalent to 7 cents per ton of seed.

Table 27.--Average cost per ton marketed for storing cottonseed at gins, by regions, season 1947-48

Item of storage cost	Average cost per ton of storing cottonseed at gins in the--				
	Southeastern region	South central region	Southwestern region	Far western region	United States
	Cents	Cents	Cents	Cents	Cents
Insurance on seed	16	13	13	11	14
Insurance on seed house	10	8	7	3	7
Repairs to seed house	6	6	7	1	6
Depreciation on seed house	20	13	11	1	12
Interest on seed-house investment	10	7	6	1	6
Total storage cost	62	47	44	17	45

Repairs to seed houses included all costs normally incurred in keeping houses in satisfactory condition but excluded expenditures for changing the size or design of buildings. Expenses of repairing seed houses amounted to 6 cents per ton of seed sold by ginners in the 1947-48 season.

Depreciation and interest on the investment for seed storage facilities at gins were important items of storage cost. The cost required to provide for the depreciation of seed storage houses averaged 12 cents per ton, an amount two times greater than that necessary to compensate ginners for the investment represented by seed houses.

Monetary losses incurred by ginners as a result of unfavorable differences between weights on which payment was made to growers and weights on which settlement was received from mills represented an item of cost in marketing. During the 1947-48 season, losses in weight sustained by ginners accounted for financial losses averaging 30 cents per ton for the Belt as a whole (table 28). In certain regions, however, ginners reported gains between

weights used in buying and those established as a basis of sale. In the far western and southwestern regions such favorable weight out-turns yielded ginners an average profit of 35 and 60 cents per ton, respectively. On the other hand, ginners in the southeastern region suffered a loss of $1.85 per ton of seed handled as a result of losses in weights. In the south central region, an average loss of 30 cents per ton from weight differences was reported by ginners.

Table 28.--Average financial gains or losses to ginners as a result of differences per ton in buying and selling weights, by regions, season 1947-48

Region	Gain per ton	Loss per ton
	Dollars	Dollars
Southeastern		1.85
South central		0.30
Southwestern	0.60	
Far western	0.35	
United States		0.30

Presumably ginners in the southeastern and the south central regions scaled down prices offered growers sufficiently to compensate for the additional expense arising from losses in weight. Possibly, as a result of competitive pressure, ginners in the far western and southwestern regions passed back some of the added revenue from weight gains to growers in the form of a higher level of prices. Regardless of the circumstances, the present over-all situation with respect to the determination of cottonseed weight at gins indicates the great need for improvement in this phase of marketing.

Costs and Allowances to Ginners for Transporting Cottonseed from Gins to Oil Mills

Cost of Transporting Seed by Ginners

As previously mentioned, ginners often hauled the seed to mills and bore the cost of transportation. In such cases, gins received additional payments from oil mills for providing such

services. As considered in this study, transportation costs incurred by ginners under such arrangements included expenses of loading the seed as well as actual hauling costs. Although ginners received reimbursement for providing transportation and even realized a slight profit in many cases, data on such costs were assembled in view of their over-all importance in marketing.

Costs to ginners for moving seed to mills varied according to factors such as the size of shipments, distances traveled, and methods of loading. During the 1947-48 season, the cost involved in the transportation of seed by ginners throughout the Belt averaged $1.90 per ton (table 29). Average payments received by ginners from mills for performing such services amounted to $2.03 per ton, thus providing a small profit. As would be expected such average costs by regions varied somewhat with the average distance of haul ranging from $1.76 per ton in the southwestern region where seed were moved the shortest distance to $2.15 and $2.04 per ton in the far western and southeastern regions, respectively, where seed traveled over longer routes. Estimates of ginners in the southwestern and south central regions indicated that payments received for such services only balanced the corresponding costs. In the far western region, allowances paid ginners by mills for transportation exceeded costs by 58 cents per ton, and in the southeastern region ginners received allowances in excess of costs amounting to 26 cents per ton.

Table 29.--Estimated costs and allowances of transporting cottonseed from gins to oil mills by ginners and truckers employed by ginners, by regions, season 1947-48 1/

Region	Transportation cost per ton	Transportation allowance per ton	Profit per ton
	Dollars	Dollars	Dollars
Southeastern	2.04	2.30	0.26
South central	1.78	1.78	0.00
Southwestern	1.76	1.77	0.01
Far western	2.15	2.73	0.58
United States	1.90	2.03	0.13

1/ Includes loading and hauling.

On account of appreciable variations in the average distances ginners transported seed in the various regions, relative costs of the operation as between regions may be considered in terms of costs per ton-mile. On this basis, transportation expenses were lowest in the far western region with a cost of 3.6 cents per ton-mile, and highest in the southwestern region at 4.7 cents per ton-mile as compared with a Belt-wide average of 4.4 cents (table 30). Although cottonseed were moved over comparatively long routes in the southeastern region, the sizes of shipments were relatively small and costs were 4.5 cents per ton-mile or slightly in excess of the over-all average. Allowances received by ginners averaged 4.7 cents per ton-mile. Allowances exceeded costs by 1.0 cent per ton-mile in the far western region and by 0.6 cents per ton-mile in the southeastern region. As mentioned previously, ginners in the other regions reported breaking even in providing transportation services.

Table 30.--Estimated costs and allowances per ton-mile paid and received by ginners in transporting cottonseed from gins to oil mills, by regions, season 1947-48

Region	Transportation of cottonseed-- Actual costs per ton-mile	Allowances per ton-mile	Profit per ton-mile
	Cents	Cents	Cents
Southeastern	4.5	5.1	0.6
South central	4.3	4.3	0
Southwestern	4.7	4.7	1/
Far western	3.6	4.6	1.0
United States	4.4	4.7	0.3

1/ Less than 0.1 cent.

Costs of Loading Cottonseed at Gins

Transportation costs cited above included costs of loading the seed at gins. Such costs of loading not only accounted for an appreciable part of the total expense for shipping seed but also varied widely according to methods used in performing the loading operation.

Expenditures by ginners for loading seed for shipment averaged 29 cents per ton or about 15 percent of the total transportation cost (table 31). Loading costs ranged from 15 cents per ton in the far western region where total shipping costs per ton-mile were lowest to 35 cents per ton in the southwestern region where transportation costs per ton-mile were highest. In the far western region, loading costs comprised only about 7 percent of the total cost of transportation by ginners as compared with approximately 20 percent in the southwestern region. In both the southeastern and south central regions, loading costs were on a comparative level with the Belt-wide average, representing about 15 percent of the total outlay for transporting seed to mills by ginners.

Table 31.--Estimated cost of loading cottonseed at gins, by specified methods, by regions, season 1947-48

Method of loading	Cost per ton of loading in the--				
	Southeastern region	South central region	Southwestern region	Far western region	United States
	Cents	Cents	Cents	Cents	Cents
Hand labor	47	47	58	75	51
Chute	14	16	21	10	16
Conveyor	28	33	13	22	20
Pneumatic	12	15	-	10	14
All methods	32	28	35	15	29

Costs for loading seed manually with forks was 51 cents per ton, an amount two and one-half to about three and one-half times greater than costs by any other method. The loading of seed by drop chutes, a practice used to a considerable extent in all regions and particularly prevalent in the far western region, resulted in costs of only 16 cents per ton for the Belt as a whole and 10 cents a ton in the far western region. Seed loaded by belt or screw conveyors cost 20 cents a ton on the average, ranging from 13 cents per ton in the southwestern region to 33 cents per ton in the south central region. The relatively high costs of loading seed by hand labor, a practice followed in loading 37 percent of the seed marketed during 1947-48, indicated that appreciable savings might be effected over a period of time by greater use of mechanical

devices or drive-under chutes in loading operations. For example, if that part of the 1947 commercial crop loaded by hand had been loaded by chute, potential savings would have amounted to about $525,000.

PRACTICES OF OIL MILLS IN PROCURING COTTONSEED

Sources from which Oil Mills Obtained Cottonseed

During the 1947-48 season, oil mills received approximately 97 percent of their seed supplies from ginners, about 1 percent directly from producers, and the remaining 2 percent chiefly from other oil mills (table 32). Oil mills in all regions except the southwestern obtained from 97 percent to approximately 100 percent of their seed directly from ginners. In the southwest, mills obtained about 5 percent of seed supplies from other mills, this movement likely being unusually large because of the fact that a bumper crop was harvested in some sections whereas production was greatly below average in others.

Table 32.--Sources from which oil mills obtained cottonseed, by regions, season 1947-48

Region	Proportion of cottonseed received from--			
	Ginners	Farmers	Other sources 1/	All sources
	Percent	Percent	Percent	Percent
Southeastern	97	3	2/	100
South central	99	2/	1	100
Southwestern	94	1	5	100
Far western	100	2/	-	100
United States	97	1	2	100

1/ Principally other oil mills.
2/ Less than 0.5 percent.

Formerly an appreciable part of the cottonseed crop was obtained by oil mills through brokers. In more recent years, this practice has been largely discontinued and was practically non-

existent during the season of study.

Method and Distance of Transporting Cottonseed Received by Oil Mills

Transportation by rail was formerly the most common method of moving cottonseed from gins to oil mills. In recent years, however, motor vehicles have become the principal means of transporting cottonseed to mills.

Approximately 89 percent of cottonseed was received at oil mills by truck, 10 percent by rail, and about 1 percent directly from adjacent gins by pneumatic or screw conveyors (table 33). Shipments by rail were more important in the south central and southwestern regions where from about 11 to 12 percent of the seed were received at mills by rail. About 5 percent of the seed in the far western region was conveyed directly to mills from gins as compared with 1 percent or less in other regions.

Table 33.--Proportions of cottonseed received at oil mills according to specified methods of shipment, by regions, season 1947-48

Region	Proportion of cottonseed received at oil mills by--			
	Rail	Truck	Direct from adjacent gins	All methods
	Percent	Percent	Percent	Percent
Southeastern	8	91	1	100
South central	12	87	1	100
Southwestern	11	89	-	100
Far western	3	92	5	100
United States	10	89	1	100

According to information obtained from mills, 10 percent of the cottonseed was received by rail. In comparison, ginners stated that they shipped only 6 percent of the seed to oil mills by rail (table 23). Since oil mills received a small proportion of seed from sources other than gins, the relative volumes moved by rail, as given by ginners and by oil mills, differed slightly. According

to the Bureau of the Census, 189,132 tons of cottonseed were reshipped during the 1947-48 season. Presumably most of such reshipments were from one mill to another and traveled over considerably longer distances than at the time of the initial haul. Oil mills reported receiving seed from an average distance of 59 miles, as compared with an average shipping distance of 43 miles estimated by ginners.

Receiving and Unloading Cottonseed at Oil Mills

When shipments of cottonseed arrive at oil mills, the loaded trucks or rail cars are weighed, unloaded, and then reweighed to determine the net weight of seed included in each shipment. Most lots of incoming seed are sampled before or during unloading since seed generally are purchased from ginners on a quality basis according to a standard grading system promulgated and supervised by the United States Department of Agriculture. Under this system, an individual oil mill selects a mill employee to obtain necessary seed samples, such an employee having been licensed by the U. S. Department of Agriculture for this purpose. Using prescribed sampling tools and procedures, the sampler obtains from various parts of each load of seed not less than 2 pounds of cottonseed for each ton in the load. The various individual samples are combined to form a gross sample which is weighed carefully and then cleaned to determine the content of foreign matter in the seed. After cleaning, a representative 2 pound sample is taken from the gross sample and is packed in an airtight container, which is forwarded to a chemist licensed by the U. S. Department of Agriculture. Such licensed chemists analyze seed on the basis of the samples and issue official certificates of grade. Their activities in this regard also are supervised by the Department.

Methods used in unloading cottonseed at oil mills include pneumatic unloaders, power shovels, hydraulic unloaders, and hand labor with forks. With pneumatic unloaders, seed are drawn into movable suction pipes in much the same manner that seed cotton is unloaded at gins. Power shovels consist of mechanically powered scoops, and hydraulic unloaders or truck dumpers unload seed by inclining the front end of trucks by hydraulic ram sufficiently to allow the seed to flow out of the back of the vehicles--both methods requiring the removal of the end-gates from trucks. Most mills utilize more than one method of unloading to some extent.

During the 1947-48 season, mills unloaded almost one-half of the seed receipts pneumatically and about one-third by power shovel (table 34). Approximately 12 percent of the seed was unloaded by hydraulic lifts or dumpers and about 9 percent was removed from vehicles by hand labor.

Table 34.--Proportions of cottonseed unloaded at oil mills by various methods, by regions, season 1947-48

Method of unloading	Proportion of cottonseed unloaded at oil mills in the--				
	South-eastern region	South central region	South-western region	Far western region	United States
	Percent	Percent	Percent	Percent	Percent
Pneumatic unloader	65	45	59	4	49
Power shovel	28	45	10	26	28
Hydraulic lift	-	4	27	17	12
Hand labor only	4	5	4	46	9
Direct gin to mill	3	1	-	7	2
All methods	100	100	100	100	100

From very nearly one-half to approximately two-thirds of the seed was unloaded pneumatically in all regions except the far western where use of this method was negligible. In the far western region about one-fourth of the seed was unloaded by power shovels, this method also being used for unloading nearly one-half of the seed at mills in the south central region. The use of hydraulic unloaders was confined principally to the southwestern region where slightly more than one-fourth of the seed was unloaded in this manner. Unloading operations were conducted by hand labor to some extent in all regions but this method was most prevalent in the far western region.

Storage Practices at Oil Mills

Oil mills customarily have storage facilities equipped with cooling equipment necessary to retard seed deterioration and, therefore, perform practically all the long term storage of seed. Although the function of storage of cottonseed by mills could be considered a step in processing as logically as a phase of marketing, some attention during this study was given to practices and costs involved in the storage of seed at oil mills. These practices and attending costs likely would be modified somewhat if a method were perfected to condition high-moisture content seed in order to retard deterioration and allow such seed to be stored safely either at gins or farms. In such an event mills could operate with smaller storage facilities and with lesser expense for cooling seed.

In 1947-48, oil mills received practically three-fourths of the total supply of seed for the season during September, October, and November but processed only about two-fifths of the total volume during this 3 month period. Cottonseed were stored at oil mills across the Belt for an average period of 101 days during the 1947-48 season (table 35). In the far western and south central regions, seed were stored about 120 days. Storage periods in the southeastern and southwestern regions averaged 89 days and 81 days, respectively.

Table 35.--Average period of storage of cottonseed at oil mills, by regions, season 1947-48

Region	Average period of storage of seed at oil mills
	Days
Southeastern	89
South central	121
Southwestern	81
Far western	120
United States	101

Oil mills in the United States had facilities capable of storing approximately 8,400 tons of seed per mill (table 36). Storage capacities were greatest at mills in the far western region, with an average of 17,500 tons per mill. In the south central region, another area of heavy production, the average storage capacity per mill was slightly more than 13,000 tons. Considerably smaller storage facilities were found in the southeastern and southwestern regions where capacities for storing seed were 5,000 and 6,800 tons per mill, respectively.

In 1947-48 oil mills had seed storage facilities the full use of which at any one time would have held 71 percent of the total volume of seed crushed during the season (table 37). In the far western region where storage capacities per mill were greatest, the average volume of seed crushed per mill was two to four times greater than that in other regions. In some instances mills in the far western region were forced to store seed on concrete slabs to await processing, a practice feasible because of the dry climate. In the southeastern and south central regions storage capacities

in relation to the total seed processed averaged 68 percent and 84 percent, respectively. Greater storage facilities were necessary in these regions, since seed stored in the open would be subjected to excessive weather damage.

Table 36.--Average cottonseed storage capacity of oil mills, by regions, season 1947-48

Region	Storage capacity for cottonseed per mill
	1,000 Tons
Southeastern	5.0
South central	13.1
Southwestern	6.8
Far western	17.5
United States	8.4

Table 37.--Average volume of cottonseed crushed per oil mill and proportion of cottonseed crushed for which mill storage space was available, by regions, season 1947-48

Region	Volume of cottonseed crushed per oil mill 1/	Proportion of seed crushed for which mill storage was available
	1,000 tons	Percent
Southeastern	7.3	68
South central	15.7	84
Southwestern	11.5	60
Far western	31.1	56
United States	11.8	71

1/ Compiled from Bureau of the Census data.

The Significance of Grading in Marketing Cottonseed

From the very inception of the cottonseed crushing industry, a major problem encountered in the marketing of seed resulted from the fact that individual lots of seed frequently varied appreciably both in the quantity and in the quality of products yielded in processing. Since the value of seed obviously is controlled by the amount and quality of the products obtainable which in turn are affected by at least six variables--the percentages of oil, ammonia, moisture, foreign matter, and linters in the seed, and the proportion of free fatty acids in the oil--steps were taken early in the history of the industry to determine accurately the comparative values of individual lots of seed. Several systems of evaluation were tested and discarded and until recent years seed were marketed almost exclusively on an "as is" basis.

After extensive research, the present system of grading was promulgated by the U. S. Department of Agriculture and put into effect in the south central region in 1932. Under supervision of the Department, use of the official grading system as a basis for transactions between oil mills and ginners gradually spread over a considerable part of the Cotton Belt. During the 1947-48 season, oil mills bought 73 percent of the seed on the basis of official grade (table 38). Practically all the remainder was purchased on an "as is" basis.

Table 38.--Proportions of cottonseed purchased by oil mills on specified methods of settlement between oil mills and gins, by regions, season 1947-48

Region	Proportion of cottonseed purchased by oil mills on--			
	Official grade	Unofficial grade	"As is"	All methods
	Percent	Percent	Percent	Percent
Southeastern	91	1/	9	100
South central	97	-	3	100
Southwestern	59	5	36	100
Far western	-	28	72	100
United States	73	5	22	100

1/ Less than 0.5 percent.

Approximately 97 percent of seed purchases by oil mills in the south central region and 91 percent of those in the southeastern region were acquired on official grade. In the southwestern region about three-fifths of the seed were acquired by mills on official grade. In the far western region, no trading was conducted in terms of the official grades. Mills in that region bought approximately 72 percent of the seed "as is" and the remainder according to an unofficial method of grading.

The present official grading standards are primarily based on the quantity and quality of cottonseed oil and cake produced per ton of seed. These items account for from 75 to 90 percent of the total value of the products, depending upon relative prices of the various products. As the amount of available oil and cake increases, the seed become more valuable.

During the 1947-48 season, 491 samplers were licensed to draw samples for use in obtaining official cottonseed grade certificates. Such official samples were forwarded for analysis to one of 21 licensed chemists located in 10 towns and cities in major producing areas. Usually a period of from 3 to 6 days was required between the time samples left mills until official grade certificates were received back at mills. The charge made by licensed chemists for grading and analysis was $2.75 per sample.

Although these official procedures have been highly satisfactory in transactions involving large lots of seed between oil millers and ginners such a system is not applicable to the sale by growers of bale lots of seed to ginners. The steps required in sampling the seed, the length of time involved, and the cost have prohibited use of this method at the gin level. A grading system feasible for use at gins must provide simplicity and low cost as well as rapid determination of results. Such a combination of requisites imposes a formidable technical hurdle and although both private agencies and the Department of Agriculture have conducted considerable research, no immediate solution to the problem is in sight. Research, however, is being continued and should result in some practical method adaptable for use at gins.

COSTS TO OIL MILLS IN PURCHASING AND STORING COTTONSEED

A detailed appraisal of the total cost to oil mills in procuring cottonseed would involve analyses not only of expenses related solely to the marketing of seed but also of those costs jointly associated with other phases of mill operation. In this preliminary study, no attempt was made to explore the nature and extent of all costs that could be attributed to the cottonseed

procurement activities of oil mills. The collection of information was limited to those major items of direct cost that could be provided most readily from mill records or the estimates of mill managers.

Cost of Transporting Cottonseed

As previously stated, oil mills purchased seed f.o.b. points of origin and either provided the necessary transportation or else reimbursed ginners or public carriers for performing the service. Such transportation cost normally included that of loading and hauling and represented the chief item of expense in the marketing of seed by mills.

During the 1947-48 season, expenditures by oil mills for the transportation of cottonseed averaged $2.40 per ton (table 39). The cost of transporting seed by rail over the longer routes was $3.57 per ton or about 50 percent more than the average amount incurred in moving seed for the shorter hauls by truck.

Table 39.--Average cost per ton for transporting cottonseed to oil mills, according to method of shipment, by regions, season 1947-48

Region	Cost per ton to oil mills for transporting cottonseed by--		
	Rail	Truck	Rail and truck
	Dollars	Dollars	Dollars
Southeastern	3.14	2.34	2.40
South central	2.58	2.13	2.18
Southwestern	4.91	2.27	2.55
Far western	3.96	2.65	2.69
United States	3.57	2.28	2.40

Costs for transportation obviously were higher in regions where the average distances of haul were greater, ranging from $2.18 per ton in the south central region to $2.69 per ton in the far western region. Costs to mills in the southeastern region averaged $2.40 per ton, an amount which is identical with the Belt-

wide average, and mills in the southwestern region incurred costs averaging $2.55 per ton. Since the great bulk of the seed was moved by truck, costs of truck movement by regions were but slightly less than the average costs for both methods combined. Costs of rail shipments, however, in the southwestern and far western regions represented the maximum amounts expended for transportation, averaging $4.91 and $3.96 per ton, respectively.

On a per ton-mile basis, transportation costs for all mills were 4.1 cents representing a cost of 2.2 cents per ton-mile by rail and 4.8 cents by truck (table 40). Costs by both truck and rail were lower in terms of ton-miles in the southwestern and far western regions than in the other two regions. Cost for truck hauling averaged 3.9 cents per ton-mile in the far west and 4.4 cents in the southwest as compared with costs ranging from 5.0 to 5.6 cents in the eastern part of the Cotton Belt. Rail costs averaged 1.6 cents per ton-mile in the southwestern region and 2.0 cents in the far western region, in comparison with average costs of about 3.5 cents per ton-mile in the eastern regions.

Table 40.--Average cost per ton-mile to oil mills for transporting cottonseed to oil mills according to method of shipment, by regions, season 1947-48

Region	Cost per ton-mile of transporting cottonseed by--		
	Rail	Truck	Average rail and truck
	Cents	Cents	Cents
Southeastern	3.6	5.0	4.8
South central	3.4	5.6	5.2
Southwestern	1.6	4.4	3.2
Far western	2.0	3.9	3.7
United States	2.2	4.8	4.1

Costs of Receiving Cottonseed at Oil Mills

As shipments of cottonseed are received at mills, certain costs are involved in weighing, sampling, grading, and unloading

the seed. Such receiving services are performed at the mill, except that all official grading is conducted by private chemical laboratories, the chemists making the analysis being licensed by the U. S. Department of Agriculture. Since very few mills maintained separate accounting records relative to the various steps in receiving seed, information on receiving costs was obtained chiefly in the form of estimates.

Mills reported that the estimated cost of receiving cottonseed during the 1947-48 season averaged 56 cents per ton (table 41). By regions such costs ranged from a low of 42 cents per ton in the southwestern to a high of 76 cents per ton in the south central region. In the southeastern region, receiving costs also were relatively low amounting to 46 cents per ton. In the far west, costs of this nature on the whole were very similar to the national average.

Table 41.--Estimated costs of receiving cottonseed at oil mills, including sampling, grading, weighing, and unloading cottonseed, by regions, season 1947-48

Region	Per ton costs of receiving cottonseed by oil mills for--				
	Sampling	Grading	Weighing	Unloading	Total receiving costs
	Cents	Cents	Cents	Cents	Cents
Southeastern	8	13	7	18	46
South central	9	12	14	41	76
Southwestern	6	11	6	19	42
Far western	2	5	10	40	57
United States	7	11	9	29	56

Expenses in unloading seed accounted for slightly more than one-half of total receiving costs and amounted to 29 cents per ton. Minor items of costs in receiving seed were somewhat similar, involving expenditures of 9 cents per ton for weighing, 7 cents for sampling, and 11 cents for grading.

Receiving costs were greatest in the south central region largely because of the relatively high unloading expense which not only exceeded that of any other region but was slightly more than two times greater than similar costs reported by mills in the south-

east and southwest. Costs for grading and sampling were relatively low in the far west where no seed were marketed on official grade but comparatively high unloading costs caused receiving costs in this region to exceed those estimated by mills in the southeast and southwest. Weighing costs also varied appreciable between regions ranging from 14 cents per ton in the south central to 6 cents per ton in the southwestern regions.

The sizable range reported between regions in costs of unloading seed was occasioned both by the fact that some methods of unloading were appreciably more economical than others, and also because costs for any one method tended to vary considerably between regions. For the Cotton Belt as a whole, the cost of unloading seed by hand amounted to 49 cents per ton and the use of power shovels resulted in an average cost of 42 cents per ton (table 42). In contrast, seed unloaded by pneumatic conveyors and hydraulic lifts or dumpers involved costs of 22 and 16 cents per ton, respectively.

Table 42.--Estimated costs of unloading cottonseed at oil mills according to various methods, by regions, season 1947-48

Region	Cost per ton to unload cottonseed by--					
	Pneumatic conveyor	Power shovel	Hydraulic lift	Hand labor only	Direct: gin to: mill	All methods
	Cents	Cents	Cents	Cents	Cents	Cents
Southeastern ..	17	18	-	38	23	18
South central .	31	48	15	93	19	41
Southwestern ..	18	21	17	47	-	19
Far western ...	25	84	17	28	25	40
United States	22	42	16	49	23	29

In the south central region where unloading costs were highest on the average, most of the seed was unloaded in about equal proportion by pneumatic conveyors, a relatively economical method, and by power shovel, a method for which estimated costs were relatively high. In this region, however, costs for both of these methods were comparatively high in relation to costs indicated for the Belt as a whole. In the far western region, seed were unloaded principally by hand labor but to some extent by power shovel, the two most expensvie methods. Costs of unloading by hand labor in this

region were lower since extensive use was made of trucks with side doors which, when opened, greatly facilitated unloading. Unloading costs were relatively low in the southwestern region where most of the seed was unloaded pneumatically and by hydraulic lifts, both of which methods involved relatively low costs. The minimum unloading cost of 16 cents per ton reported by mills utilizing hydraulic lifts indicates that performance of such devices likely is being watched with great interest by the industry. This method has been widely used in unloading small grain from trucks but has not been employed by oil mills in unloading cottonseed until recently because of the somewhat high initial installation cost of the equipment and the fact that end gates must be removed from trucks in employing the lift or dumper.

Cost of Storing Cottonseed at Oil Mills

Among costs associated with the storage of cottonseed by mills were those required in the operation and maintenance of storage facilities including repairs, insurance, depreciation, and interest on the investment represented by such facilities. Expenses were also incurred in insuring the seed held in storage and in cooling the seed to retard deterioration. The importance of taking into account anticipated volumes when planning storage facilities is apparent.

During the 1947-48 season, oil mills in the United States estimated that the average cost for storing cottonseed was 97 cents per ton (table 43). Costs for storage of seed by mills in the southeastern and southwestern regions were appreciably lower than for other regions, averaging 46 and 62 cents per ton, respectively, as compared with costs of $1.32 in the south central region and $1.82 in the far west. Seed were stored in the far western and south central regions for periods of time that averaged about 50 percent more than in the lower cost regions. Also many mills in the higher cost regions maintained expensive modern facilities with capacities from two to three times greater than in the other regions. In the far west where capacities were greatest, seed were stored for practically the same period of time as in the south central region but costs per ton were about one-fourth greater.

Table 43.--Estimated costs 1/ in storing cottonseed at oil mills, by regions, season 1947-48

Region	Storage cost per ton at oil mills
	Dollars
Southeastern	0.46
South central	1.32
Southwestern	0.62
Far western	1.82
United States	0.97

1/ Includes insurance on seed, insurance and repairs on seed-storage facilities, interest on investment for seed-storage facilities, depreciation of seed-storage facilities, and cooling of seed.

THE PRICE STRUCTURE FOR COTTONSEED

Since only two steps usually occur in the marketing of cottonseed--(1) grower to ginner, and (2) ginner to processor--price information available for cottonseed applies to trading at these two levels. Prices quoted by mills to ginners for seed relate directly to the aggregate value of the products obtainable in processing. Such prices generally are quoted for basis 100 grade seed and in such cases do not indicate net prices being paid ginners in terms of actual grade. Prices posted by ginners relate indirectly to prices offered by millers but such prices apply to seed of whatever estimated quality currently is being received at a specific gin. Ginners normally calculate prices by subtracting a sufficient margin from existing mill prices to defray marketing expenses and allow a profit and then make a further price adjustment to compensate for any difference between the estimated quality of seed arriving at the gin and that of basis 100 grade seed. Mill prices for seed, however, do not always reflect changes in prices of products, and gin prices do not always respond to fluctuations in mill prices in a sensitive manner.

The physical characteristics of cottonseed and certain features of the organization of the oil milling and ginning industries combine to produce a definite effect upon the marketing system for cottonseed. In turn, these conditions exert considerable influence upon the determination of prices for seed and tend to result in a rather loosely knit price structure. Since no organized exchanges conduct futures trading in cottonseed, no dominant price guide exists for the commodity. Each mill and each gin to some extent contribute to the determination of seed prices. According to capacity, operating efficiency, available supply of business, and various other conditions of a local nature, each mill or gin makes its own appraisal of seed value. Differences in such individual concepts of seed values at each level of marketing are narrowed considerably by competitive forces but lack of timely price information and the decentralized nature of both industries cause appreciable variations in seed prices to exist at times between different localities and to lesser extents within relatively small areas.

At the mill level, processors must acquire practically their entire supplies of seed for a season by outright cash purchases during the comparatively short period of harvesting. The risk involved in carrying large stocks of a valuable and somewhat perishable commodity for a considerable length of time cannot be offset in the case of cottonseed by transactions in futures contracts in this commodity. The uncertainty associated with such risk obviously lessens the stability of prices offered by mills for seed particularly when business conditions appear unsettled.

In trading at gins, the multiple enterprises engaged in by ginners and the practices followed in marketing seed have a distinct bearing on the level of prices offered to growers and the accuracy with which gin prices reflect mill prices. Ginners at times sell seed for future delivery at fixed prices and therefore attempt to maintain buying prices consistent with such prearranged selling prices. Seed generally are purchased on the basis of estimated weights and almost exclusively in terms of approximated qualities. Also, many ginners at times apparently maintain charges for ginning services at levels that place considerable emphasis on cottonseed transactions as the major source of income.

As just indicated, prices quoted at any particular time by ginners in one locality are not strictly comparable with like prices in another locality without consideration of several factors. Likewise, a true comparison of the actual spread between mill prices and gin prices at any specific date would require adjustments for certain situations affecting price. Data, however, pertaining to prices paid by a large cross-section of mills and gins throughout an entire season provide a reasonably accurate

indication of actual price levels and the over-all spread in price between the two stages of marketing. According to available data, the average price paid for cottonseed by oil millers during the 1947-48 season was $101.30 per ton and that paid by ginners was $85.90 per ton--a gross spread of about $15.40 per ton (table 44). Prices for cottonseed, however, were at an exceptionally high level during the 1947-48 season. During the 1948-49 season, prices paid for seed by oil mills averaged $78.80 per ton, or $25.50 per ton less than the price paid in 1947. Similarly, the average price received by growers in 1948 was $67.20 per ton, or $18.70 less than that received in 1947, and the average spread was $8.60, or about one-half as great as that indicated in 1947.

Table 44.--Average prices received by farmers for cottonseed, average oil mill prices for cottonseed adjusted to f.o.b. gin basis, and average spread between these prices, by regions, seasons of 1947-48 and 1948-49

Region	Farm price per ton 1/		Mill price per ton f.o.b. gin 2/		Spread	
	1947-48	1948-49	1947-48	1948-49	1947-48	1948-49
	Dollars	Dollars	Dollars	Dollars	Dollars	Dollars
Southeastern ...	80.44	62.25	98.11	72.82	17.67	10.57
South central ..	86.51	66.41	103.99	74.68	17.48	8.27
Southwestern ...	86.13	71.69	100.87	79.62	14.74	7.93
Far western	94.90	71.49	99.82	76.47	4.92	4.98
United States	85.90	67.20	101.30	75.80	15.40	8.60

1/ Calculated from Bureau of Agricultural Economics data (1948-49 prices preliminary).

2/ Based on delivered prices paid by mills as assembled by National Cottonseed Products Assn. from mills accounting for 58 percent and 63 percent of the entire volume of seed processed during the 1947-48 and 1948-49 seasons, respectively, such delivered prices being adjusted to an f.o.b. gin-point basis by deducting transportation costs developed during this study.

The widest spread between prices paid by mills and prices received by farmers occurred in the southeastern region. It amounted to $17.60 and $10.57 per ton for the 1947-48 and 1948-49 seasons, respectively. During 1947-48, spreads averaged $17.48

per ton in the south central region and $14.74 per ton in the southwestern region. Spreads in these regions during the 1948-49 season, however, were only about one-half as great as during the previous season. In the far western region, the spread was estimated to be slightly less than $5 per ton during both seasons.

Higher spreads in the eastern part of the Belt probably resulted to some extent from the fact that charges for ginning services generally were somewhat low relative to operating costs, and that production was short in some sections in 1947. Also, many ginners experienced appreciable losses between buying and selling weights in 1947-48 in the southeastern and south central regions. In the southeastern region in particular the quality of seed usually follows a very irregular pattern during the latter part of the season, thus increasing risks on the part of ginners in estimating seed quality.

The price of cottonseed generally ranged upward during the 1947-48 season. Except in the far western region, few ginners sold seed in advance in 1947-48 and were able to gain some of the advantage of this ascending price movement. In the far western region where the margin between mill and gin prices was relatively small, about one-fourth of the seed was sold forward by ginners at fixed prices. In contrast to the unusual pattern and high level of cottonseed prices in 1947-48, prices during the 1948-49 season, were at a lower level and showed a considerable variation in pattern with a definite downward trend.

Little information pertaining to cottonseed prices is available from private sources. Some newspapers publish quotations on local cottonseed prices during the active marketing season. The Bureau of Agricultural Economics of the U. S. Department of Agriculture issues average farm prices of cottonseed, by months, for each producing State and releases data on prices of cottonseed products. The one report designed to provide timely cottonseed price information in detail is the Cottonseed Review issued by the Cotton Branch of the Production and Marketing Administration of the Department. This report is released weekly during the harvesting season for all cotton-producing States with the exception of Arizona, California, and New Mexico, and indicates farm prices and average grade for seed on a county basis.

The need for considerable research with respect to the cottonseed price structure is obvious. There is special need for a comprehensive study of possibilities for improving present methods of assembling and distributing accurate and timely price information in detail for use as guides in marketing by growers, ginners, and oil millers. Studies designed to measure relationships existing between prices paid at gins and the qualities of

seed marketed at the gin are needed to provide data relative to the efficiency of the present system of marketing in distributing seed income to growers. Further research concerning the influence on prices of factors such as the estimation of weights at gins, the sales of seed by ginners on forward contracts, and other marketing practices, would provide a basis for recommendations pointing to an improved marketing process.

SUMMARY

For a number of years cottonseed has been third in rank among crops in the Cotton Belt as a source of farm income. During the 1947-48 season, approximately 4.7 million tons of cottonseed having a farm value of about $402,000,000 were produced. In spite of the importance of cottonseed as a cash crop, few studies have been conducted with respect to the marketing of this commodity.

This study was conducted on a Belt-wide basis during the 1947-48 season in order to provide basic information relative to the cottonseed marketing structure and to evaluate the practices, costs, and facilities of marketing with a view to suggesting possible improvements in marketing methods and to reducing costs.

Information was obtained from gins accounting for 12 percent of the total cottonseed production and from oil mills handling 51 percent of the total volume of cottonseed processed during the 1947-48 season. For the purpose of this study, the Cotton Belt was subdivided into four geographic regions--southeastern, south central, southwestern and far western.

Cottonseed marketing channels are relatively simple and direct. Growers bring seed cotton to the gin where it is separated into lint and seed, the bulk of the seed immediately being sold to ginners. Growers sold about 86 percent of their seed to ginners and approximately 1 percent to oil mills. The remaining 13 percent was utilized on farms, chiefly for planting. Ginners, in turn, usually resold the seed promptly to oil mills. Susceptibility of seed with high-moisture content to deterioration makes storage at gins and on farms impractical in many cases and contributes to the highly seasonal nature of marketing.

As a result of the large capacity of the industry, competition between oil mills for seed generally is keen. Since mills depend almost entirely on gins for their supplies of seed, in

some sections mills have acquired ownership of an appreciable number of the gins. Approximately 11 percent of the seed was handled by mill-owned gins and about 19 percent of the seed originated from gins financially obligated to oil mills.

Most ginners established prices paid growers for seed by deducting a fixed margin from mill prices to defray marketing expenses, although about 38 percent of the ginners reported that competition was the major factor in determining prices. Prices quoted at gins customarily were publicly displayed and normally all customers were paid the quoted price. About 5 percent of the ginners, however, made added payments to a few large-scale growers for approximately 1 percent of all seed.

Ginners purchased only 38 percent of the seed on weights determined by the use of seed scales. Weights of the bulk of the seed were arrived at by estimation, the particular formula being a matter of local custom.

Ginners estimated that differences between buying and selling weights for seed resulted in an average loss of 6 pounds per ton. Losses in weight of 37 pounds per ton were reported in the southeastern region, although slight gains in weight were reported in the southwestern and far western regions. Such losses in trading weights were attributed mainly to unfavorable methods used in estimating weights, loss of moisture, and to losses of seed in transit.

Determination of cottonseed weights at gins in an accurate manner would benefit both ginners and growers and is essential to an efficient system of marketing. Apparently a satisfactory degree of accuracy would require the use of properly adjusted scales operated in a competent manner and would include provisions for periodic testing of scales and the manner of their use.

About 89 percent of the seed purchased by ginners was stored temporarily at the gin. Of this volume of stored seed, about one-third was removed to oil mills within 24 hours and another third was loaded-out within 5 days. Only one-tenth of the seed was stored at gins for more than 20 days. In the far western region where 57 percent of the gins had no seed storage facilities, about 22 percent of the seed was stored in the open for relatively short periods.

About one-half of the ginners disposed of all cottonseed to one oil mill in the locality. Of the remaining ginners three-fifths sold seed to two mills and two-fifths sold to three or more mills.

Practically all ginners sold seed outright for cash, usually at prices currently being quoted by oil mills. In the far western region, however, a large part of the seed was sold on the basis of forward contracts. About 6 percent of the seed marketed by ginners was exchanged with oil mills for cottonseed meal; the ginners in turn, exchanging the meal with growers for seed.

Since cottonseed were sold by ginners to mills on f.o.b. gin-point terms, the transportation of seed was the responsibility of mills. Many mills, however, made arrangements with ginners to perform or direct this service.

Ginners loaded 45 percent of the seed for shipment by use of drop chutes or loading bins. Vehicles were driven under bins or built-in sections of large seed houses and received seed through chutes or trap doors. About 37 percent of the seed were loaded manually with forks. Mechanical conveyors loaded 13 percent while pneumatic pipe lines were used for 5 percent of the loadings.

Approximately 92 percent of all seed shipments from gins to oil mills were made by trucks and averaged 9 tons per load. Only 6 percent of the seed was transported by rail, such shipments averaging 30 tons. The remaining 2 percent was conveyed from gins directly to nearby mill storage houses.

Seed were transported an average distance of 43 miles from gin to oil mill. The distance of haul by truck averaged 40 miles while rail movements averaged 85 miles.

No attempt was made to explore the nature and extent of all costs that could be attributed to the handling of seed at gins. Information, however, was collected with respect to certain items of direct marketing costs that could be obtained readily from gin records or on the basis of estimates offered by ginners.

Costs to ginners for storing cottonseed amounted to 45 cents per ton for the total volume of seed marketed. Losses attributed to differences in weights of cottonseed bought and sold amounted to 30 cents per ton. Banking expense in buying and selling seed was 2 cents per ton.

Expenses of ginners in transporting seed to oil mills varied according to size of shipments, distance traveled, and method of loading. Ginners estimated the actual cost at $1.90 per ton and received $2.03 per ton from mills for performing such services.

The cost of loading was an appreciable part of the total transportation cost. Loading costs averaged 29 cents per ton and varied from lows of 14 cents per ton for pneumatic loading and 16 cents for loading by chute to a high of 51 cents per ton for

loading by hand labor. The relatively high costs of loading seed by hand labor indicated that appreciable savings might be effected over a period of time by greater use of mechanical devices or drive-under chutes in loading operations. For example, if that part of the 1947 commercial crop loaded by hand had been loaded by chute, potential savings would have amounted to about $525,000.

During the 1947-48 season, oil mills received approximately 97 percent of their seed supplies from ginners, about 1 percent directly from producers, and the remaining 2 percent chiefly from other mills. Approximately 89 percent of the cottonseed was received at mills by trucks, 10 percent by rail, and 1 percent directly from adjacent gins by conveyors.

When shipments of seed arrived at oil mills, the loaded rail car or truck was weighed. Most lots were then sampled since seed generally were purchased on a quality basis according to a standard grading system supervised by the U. S. Department of Agriculture. In such cases, mill employees, licensed for this purpose, obtained samples which were sent to a chemist licensed by the Department for analyzing and grading.

Until recent years cottonseed were marketed almost exclusively on an "as is" basis. This system created a major problem in marketing since individual lots of cottonseed often varied appreciably both in quality and quantity of products yielded in processing. After extensive research the present system of grading was promulgated by the U. S. Department of Agriculture and put into effect in the south central region in 1932. Its use has spread widely and in 1947, about three-fourths of oil mill seed purchases were made on the basis of official grade. Nearly all of the seed in the eastern half of the Belt were acquired on official grade while about three-fifths of the seed in the southwestern region were purchased on an official grade basis. In the far western region, however, no cottonseed were purchased on official grade.

Although such grading has been highly satisfactory in large volume trading between oil millers and ginners, the length of time and cost involved have prohibited use of this method at the gin level. A grading system feasible for use at the gin level must provide simple, rapid, and low-cost operation. Such a combination of requisites imposes a formidable hurdle and although considerable research has been conducted, no immediate solution of the problem is in sight. Research of this nature, however, is being continued and should result ultimately in some practical method suitable for use at gins.

Methods used in unloading cottonseed at oil mills included the use of pneumatic unloaders, power shovels, hydraulic unloaders,

and hand labor with forks. One-half of the seed receipts were unloaded pneumatically and about one-third by power shovel. One-tenth of the seed was unloaded by hydraulic lifts and the remainder by hand labor.

Cottonseed were stored at oil mills for an average of 101 days for the Belt as a whole. Seed were stored for about 120 days in the south central and far western regions, as compared with 81 and 89 days, respectively, in the southwestern and southeastern regions.

In this preliminary study no attempt was made to explore the nature and extent of all costs that could be attributed to cottonseed procurement activities of oil mills. The collection of information was limited to those major items of direct cost that could be provided most readily from mill records or by the estimates of mill managers.

Expenditures by mills for the transportation of seed amounted to $2.40 per ton on an average. The average cost of transporting seed by rail over longer routes was $3.57 per ton or about one and one-half times greater than that required in moving seed for the shorter hauls by trucks. Shipping costs to oil mills averaged 4.1 cents per ton-mile, representing a cost of 2.2 cents per ton-mile by rail and 4.8 cents by truck.

Mills estimated that the cost of receiving cottonseed during the 1947-48 season was 56 cents per ton. Expenses required in unloading accounted for 29 cents per ton. In addition costs were 9 cents per ton for weighing, 7 cents for sampling, and 11 cents for grading.

A sizeable range was reported in costs of unloading seed by various methods. The costs of unloading by hand amounted to 49 cents per ton and costs in using power shovels were 39 cents per ton. Unloading by pneumatic conveyors and hydraulic lifts or dumpers accounted for costs of 22 and 16 cents per ton, respectively. The minimum unloading cost of 16 cents per ton reported by mills utilizing hydrauiic lifts likely will result in the performanace of such devices being watched with great interest by the industry.

Oil mill managers estimated that the cost of storing cottonseed averaged 97 cents per ton. Costs were higher in the far western and south central regions, where seed were stored for longer periods of time and where larger and more elaborate facilities were maintained for storing seed, than in other regions.

Cottonseed prices offered by mills to ginners relate directly to the aggregate value of products obtainable in processing but generally are quoted in terms of the basis grade of 100. Prices posted by ginners relate indirectly to prices offered by millers but such prices apply to seed of whatever estimated quality currently is being received at a specific gin.

The physical characteristics of cottonseed and certain features of the organization of the oil milling and ginning industries combine to produce a definite effect upon the marketing system and the determination of prices. Since no organized exchange conducts futures trading in cottonseed, no dominant price guide exists. Each mill and gin to some extent contribute to the determination of seed prices, local prices being forced to a reasonable similar level by competitive forces.

Little information pertaining to cottonseed prices is available. The major source of detailed price data is the Cottonseed Review of the U. S. Department of Agriculture. This report is released weekly during the harvesting season for all States except Arizona, California, and New Mexico, and gives farm prices and average grade for seed on a county basis.

The need for considerable research with respect to the cottonseed price structure is obvious. There is special need for a comprehensive study of possibilities for improving methods of assembling and distributing accurate, timely, and detailed price information as marketing guides for growers, ginners, and oil millers. Studies designed to measure relationships existing between prices paid at gins and the qualities of seed marketed at the gins are needed to provide data relative to the efficiency of the present system of marketing in distributing seed income to growers. Further research concerning the influence on prices of factors such as the estimation of weights at gins, the sales of seed by ginners on forward contracts, and other marketing practices, would provide a basis for recommendations pointing to an improved marketing process.

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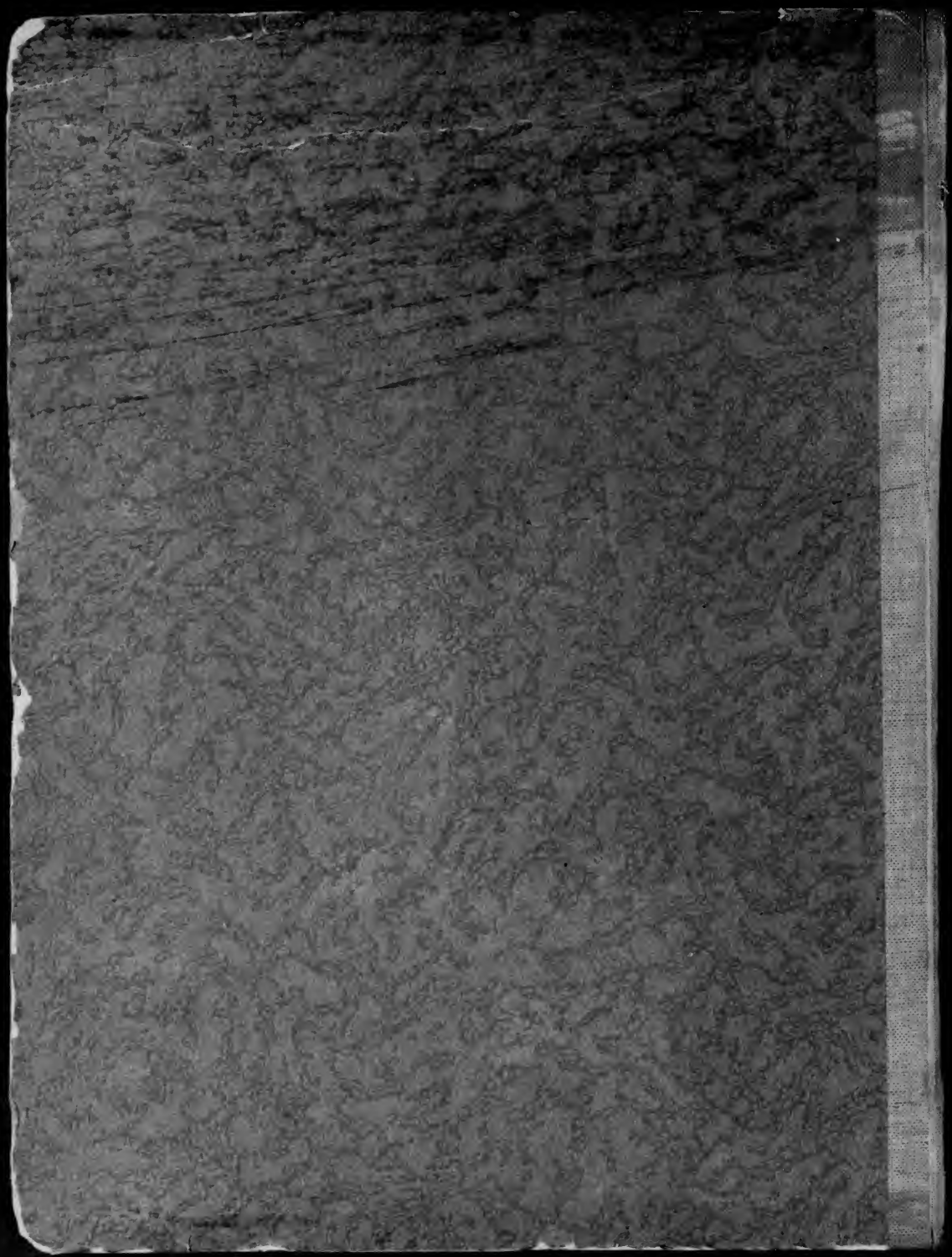

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